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CLYDE J. TIDWELL, *Editor*
Director, Bureau of Publications

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Teachers College
RECORD

April 1936

The Schools and the Community*

By NICHOLAS MURRAY BUTLER
President of Columbia University

DEAN RUSSELL struck a useful note just now when he said that perhaps you could not tell who among you were students and who were teachers and who were laymen. That is a most fortunate and desirable confusion. The more we unite in our individual thought and activity all three of those characteristics and types, the better I am quite sure it will be for all of us and for the public.

It occurs to me that perhaps the most useful contribution I can make to the topic which is suggested for discussion and consideration is to relate some personal experiences of past years that illustrate the ideals which I have in mind to advance and to support.

In the first place, let me say that a great deal of our American looseness of thinking is due to our persistent misuse of terms. Inaccuracy in the use of fundamental terms leads directly and quickly to confusion of thought which becomes unavoidable. One of the most persistent of these confusions, found steadily in the public press, used on the platform and in printed material of every sort and kind, is that between "public" and "official." In our American institutional life, public activities may be official or unofficial. In either case they are public. They are public and official if they are tax-supported, maintained and directed by an agency of government. They are public but unofficial if they are not tax-supported and are not maintained by agencies of government. That distinction goes to the very

* Address at the Advanced School of Education Conference on Lay Responsibility for the Development of Educational Policy, Teachers College, Columbia University, February 12, 1936.

root of our American institutional life and represents the distinction between the field of liberty and the field of government on which our whole organization—social, economic, and political—has been built from the beginning.

Teachers College is a public institution. It was brought into existence to serve the public. It is not an official institution, but it is as public as the public high schools in another part of the city. It represents the voluntary effort of Americans working in the field of liberty to achieve an end without any regard to governmental aid or to governmental direction. And, as a matter of fact, our public service in the field of liberty in the United States has been many, many times as valuable as our public service in the field of government. How long that will continue to be possible remains to be seen because of the operation of various forces now at work throughout the world. But the distinction, nevertheless, is vital to clear thinking.

Another persistent confusion in American speech is that between "education" and "instruction." Instruction is a valuable but wholly subordinate part of education. The school is one of the agencies of education, but not the most important or the most influential. It is the center of organized instruction, but the home and the environment are the outstanding contributing influences in the educational process. They can and do, time and time again, block and override the influence of the formal instruction given in the organized school or college.

If we are going to think straight about these subjects, we must learn to respect the difference between public and official and we must learn to respect the difference between education and instruction.

One of the phenomena that most perplexes the observer today is the widespread crime in the United States, very dreadful in its manifestations and in its severity, illustrations of which are given time and time again by men and women who have had what we supposed to be the benefit of instruction in our schools and colleges. They never were instructed to do these things which they do, but the home and the environment, or the lack of home and an evil environment, have overridden the instruction and have produced those characteristics of emotion, passion and desire which lie at the basis of these amazing, manifold and multiplied crimes.

All of which leads to this: We must not permit barriers to grow

up between our formal institutions of instruction which are educational agencies, and the other great forces in life which are co-operating educational agencies. In other words, we must be careful of the ill effects of the tendency which has manifested itself so strongly now for a generation to treat the school, its organization, and its work as so remote and so highly organized and so specific as to be beyond the reach of the understanding and co-operation of what the Dean has just referred to as the lay element of the community—parents and others. All this is greatly increased by the urban developments of this period in which we live. You may even now go into a small town in New England or in the South or in the West and Southwest and find that the school still belongs to the community and is in touch with it. The community understands it, attends the meetings, public and official, which have to do with its work, knows its teachers, co-operates with them, and is still continuing to carry on those fortunate conditions.

But the moment you come to a city of considerable size—perhaps 40,000, 50,000, certainly 100,000, and from there up to these millions in New York, Chicago, Philadelphia—in the first place, social and economic distinctions assert themselves as they do not in a very small and closely united community, and therefore the school attendance tends to become a group attendance—one group going to this kind of school, another to another kind—and the attention of the public mind, so far as it is given to co-operation with formal instruction at all, becomes strangely diverted and begins to lose influence and in time to die away.

All that most of our city populations know about formal instrumentalities of instruction and organization and ideals and methods and cost and effectiveness, they learn with more or less accuracy, or the contrary, from the newspaper. The old intimate association of the village, of the small town, cannot under the circumstances be maintained.

I want to go back over a good many years and offer you some reminiscences of my own experiences to illustrate what I still conceive to be a very fortunate relationship between community and the formal instrumentalities of instruction and education.

It was my good fortune to receive a most admirable education in the public schools of the town in New Jersey in which I was brought up. I never went to any other kind of school. My father and neigh-

bors would have supposed there must have been something wrong, requiring institutional treatment, had I done so. My teachers, with one exception, were women—five very remarkable women who could not have passed any one of the many examinations that would now be set for them by various public authorities. They came of excellent families in that town which was a very democratic community. They were admirable teachers, and today, looking back over all these decades, I hold these five women in most sincere affection and praise their memory for what they did for me in those early years. I had but one teacher who was a man. He was the principal of the high school and an extraordinary person. By his training and ability and scholarship he might have held a much more important post, but for some reason unknown to me he remained for years in this modest position.

My father was president of the Board of Education of our town for many years, and therefore our house was frequently visited by principals and teachers, and I came to know them. I heard textbooks discussed and questions of school organization, so that when I became old enough to begin to take part in public affairs, I had the introduction provided by this background of circumstances in school and home.

Immediately I attached myself to the movement which was then just taking form in this country and which had a life of about fifteen or twenty years—a useful life it proved; in fact, it brought this Teachers College into existence. It was the movement for industrial education and manual training, having a program of study for certain types of youth.

How were we to get the State of New Jersey to take an interest in that matter? I had introduced into the 1887 Legislature a bill providing that wherever a school district taxed itself to the extent of $1,000 in order to meet the cost of introducing these subjects into its school program, the state would duplicate the amount. By that very simple device, in the course of five or six years, we had broadened the whole school program of smaller New Jersey towns and had done real service to the farmers and to the industrialists, both of whom were greatly pleased. This movement was swallowed up later on, but that particular improvement was made without very much opposition because the community took an interest in the improvement of the schools of the day and did not intend to leave that improvement entirely to the teachers and boards of education.

Our state was then without a library system, and you cannot maintain an effective school without the use of a library. In the ordinary town or school district the teachers and pupils must depend upon public libraries. There were endowed public libraries in some of the larger cities, but through most of the state there were no collections of books of any importance which might be used by pupils and teachers in the schools.

In the Legislature of 1886 we had introduced an act which provided that a community—city, town, or village—which taxed itself for a public library at a certain fractional rate percentage of its assessed valuation, should have the amount annually duplicated from the state treasury. The value of that plan was that as the years passed, the assessed valuations of all these communities increased; therefore the appropriations increased; therefore the state grants increased; therefore libraries got a little more. Those of you who know New Jersey will find not scores but hundreds of libraries all over that state aiding the schools in their work of education, which are the result of the community's taking enough interest to bring about this addition to their resources.

Another thing with which we had to deal was what I can best describe (although we did not have the word then) as "educational static"—partly the result of the operation of the law of intellectual gravitation and partly the effect of politics. Our administrative boards of education, state and local, were primarily political, and they used their political preferences and choices and influence chiefly in the matter of personnel. If they were electing janitors or clerks, they chose them from the political party to which they belonged. They allowed their law of intellectual gravitation to operate by letting everything alone and resisting any attempt at changed conditions or improvement.

I was invited by the Governor of the state to go upon the State Board of Education, and fortunately at the same time a youth of my own age, a graduate of Princeton, was also put on the Board, and we two conceived the notion of making a disturbance. We found that we were trustees of the State Normal School at Trenton—a most dignified institution which was practically serving as a high school for the city of Trenton. Its service to the state in the way of offering anything approaching the professional training of teachers was at a

minimum. So what we had to do—and it was painful—was to invite the reorganization of the teaching staff, beginning at the head. We had to provide residential buildings for students from other parts of the state, and we had to recast the entire program of study to make it really a normal school. All this had to be done in the public interest, and we were only able to do it because the Governor of the state, Leon Abbett, supported the Board. Had he failed, we could not have done it, but we got it done and we brought into existence the beginnings of the institution which now so creditably exists.

We also had to deal with the county superintendents of schools. There are twenty-one counties in the State of New Jersey and each county had a superintendent of schools with very considerable authority and influence outside the incorporated cities and towns. Unfortunately, these county superintendents had been chosen for almost every reason except that of fitness and, therefore, we had to make many and drastic changes. The result was not only a very noticeable improvement in the effectiveness of rural school supervision, but a great lessening of the influence of partisan politics in the choice of these county superintendents. My last contact with the educational system of the State of New Jersey came shortly after the happenings which I have mentioned. It had to do with the displacement of political school boards in the second-class cities of the state for non-political boards of education in order to diminish and, if possible, to destroy the influence of partisan politics in the public school administration. We accomplished this by having the Legislature of 1892 enact a statute providing that the Boards of Education in cities of the second class should thereafter be appointed by the Mayor and should be non-political in character. The Mayor of my home town retaliated by insisting that I accept appointment to the new Board of Education. This I did and served as its President for a year and until it became a physical impossibility for me properly to discharge the duties of this post and to carry on my work at Columbia University. It was at that time that I changed my legal residence from New Jersey to New York, as my actual residence had been changed a number of years earlier.

When I moved my legal residence from New Jersey to New York, I came upon a most interesting situation here. Those of you who have no knowledge of the New York of that day must remember that it

was 1897 before this city was integrated. We then had New York, which included Manhattan and the Bronx; we had Brooklyn. Long Island City was in Queens County, and of course Staten Island was in Richmond County. The school system of Brooklyn was far in advance of the school system of Manhattan and the Bronx. There are reasons for that into which I have not time to go, but in large part it was the result of the fact that the character of the population of Brooklyn had been predominantly residential and one taking keen interest in the public schools and following their organization and development closely. Moreover, the press of Brooklyn—particularly the Brooklyn *Eagle*, which was a great paper in those days—took the keenest interest in the schools, followed their work, and kept the reading public closely and excellently informed. But, chief of all, they had a really great school superintendent, Dr. William H. Maxwell.

In Manhattan and the Bronx we had a district system of school administration. We had a Board of Education which had comparatively little authority. We had a superintendent of schools who had general supervisory authority, but the actual day-by-day management was in the hands of the District Boards of five members each. Please remember that the village of Manhattanville at the foot of the hill yonder was so remote that not so many years ago the mode of approach to it was by coach from where Macy's store now is at Sixth Avenue and 33rd Street—one at ten in the morning and one at two in the afternoon. There was not a single building north of 59th Street on this side of town other than the old suburban residences, except a few scattered shacks occupied by squatters with their goats and cows. On the east side, Yorkville was a separate village and Harlem still more distant. There were large gaps in the countryside of Manhattan Island.

Out of that situation there had developed a spirit of local pride and ambition, and as the town thickened up and became solid these little groups controlled the schools. It took us five years of work before the Legislature at Albany to get them wiped out. It was one of the most vigorous and persistent fights that I have ever seen. The bitterness of these local groups was intense. They not only did not speak to any of us, but they classed us with very undesirable inhabitants of both this and the future life. We finally got this job done, but when we got it done we had only done half the full job. Then, for-

tunately, there came the unification of the city and in 1897 we had a mayor for the Greater New York. It was to rouse public opinion to action in respect to these questions that we brought into existence the Public Education Association of which I was the first executive officer.

The way we got the first superintendent of schools of the greater city may interest you. In the ordinary process the Board of Education would have taken some one of the principals, but we persuaded them to send a committee of three to offer the post to President Gilman of Johns Hopkins University. We knew he would not take it but that he would be very nice about it, and that this act would raise their eyes above the level on which they were accustomed to look. When Mr. Gilman very politely and charmingly declined, we secured the election of Dr. Maxwell of Brooklyn, and he began his noteworthy administration as Superintendent of Schools of Greater New York.

Up to that moment there was not a high school on the Island of Manhattan. Brooklyn had high schools, but not Manhattan. The only institution of secondary school type was that which has now become the College of the City of New York, which was founded some ninety years ago as a Free Academy and intended to do the work of a high school as we understand that term. The Free Academy had its home at Lexington Avenue and 23rd Street and did very fine public service there for many years. Finally, a generation ago this institution, having gradually developed into a college, was moved to the magnificent buildings in which it is now housed. It was essential, therefore, that genuine high schools of different types should be added to the existing primary and grammar schools on the Island of Manhattan. After no little effort and despite no little opposition, three of these high schools were brought into being. In order to give them distinction they were named for De Witt Clinton and Gouverneur Morris and Lydia F. Wadleigh. There was eager ambition on the part of many grammar school principals to become the heads of these three new institutions, but wiser counsels prevailed and experienced high school principals were brought to Manhattan from Massachusetts, from Missouri, and from the State of New York. These men and their associates started the present high school system on its way.

There was one final undertaking of largest consequence and importance which was yet to come. That was the unification of the administration of the educational system of the State of New York.

This unification had been provided for as long ago as 1784 when Alexander Hamilton drafted his original plan for the University of the State of New York, which was to include schools and colleges of every type and kind in one administrative system. It is interesting to note that when, following the French Revolution, the educational system of France was made over, Hamilton's plan was copied in its entirety and continued in existence until about a generation ago. The various universities of France were called academies and the word, university, applied to the nation's entire educational system. This was precisely what Hamilton had done in the State of New York a decade earlier. Under Hamilton's plan the Trustees of Columbia College in the City of New York became the Regents of the University of the State of New York, but it was quickly found that this plan would not work and it was terminated in 1787. From that year the Regents of the University of the State of New York have had their present status, but they were never provided for or included in the Constitution of the State of New York until 1894, when a group of us working under the leadership of the late Frederick W. Holls of Yonkers brought that about. About a hundred years ago a separate organization was set up for the public school system of the state with a State Superintendent of Public Instruction as its administrative head. This was part of the movement which we associate with the names of Horace Mann of Massachusetts and Henry Barnard of Connecticut. It did not take long for friction to develop between the Regents and the Department of Public Instruction and although this friction had its ups and downs it was never wholly absent. Partisan politics entered into it at times, as did personal ambition and desire for power. Finally, a situation came about where it seemed absolutely necessary really and finally to unify the educational administration of the state. The fight to accomplish this was one of the most severe in which I have ever been engaged. Most of the Regents and their staff were violently opposed to unification as were many of the prominent politicians in the state as well as many of the officials in the Department of Public Instruction. The hearing on our bill which took place in the Senate Chamber at Albany was one of the most violent and tempestuous that I have ever attended. One might well have supposed that he was at a prize fight instead of at a hearing on a measure to

improve the administration of public education. Governor Odell came to our aid and put his whole influence staunchly behind the measure and ensured its enactment into law. One compromise was made in order to pacify a certain element in the Legislature, which was that while the Commissioner of Education should statedly be chosen by the Regents, the first Commissioner should be appointed by the Governor. The question then arose as to who this first Commissioner should be. It was pointed out to Governor Odell that there was one outstanding person who should be considered first of all. This was Andrew S. Draper, formerly of Albany, New York, who, having served with distinction as State Superintendent of Public Instruction, was displaced by the Legislature for reasons of partisan politics. After a short time as City Superintendent of Schools at Cleveland, Ohio, Mr. Draper had gone to the University of Illinois as its President. He was having marked success in that important post. Mr. Draper, therefore, was the one person who united successful experience as State Superintendent of Public Instruction with successful experience as President of a State University. He was obviously the man to be the first to occupy the new and important post in which he would have general supervision both of schools and of colleges and universities. Governor Odell quickly assented to this suggestion and authorized me to tender Mr. Draper appointment as first Commissioner of Education.

I returned to New York by the Empire State Express, went to the Century Club and at about ten-thirty o'clock in the evening called up President Draper on the telephone in his home at Urbana, Illinois. I told him what had been done and what was proposed. He asked me if I thought he ought to take the new post despite the fact that he was so happy and so successful where he was. My answer was, "Yes, there is no other person but you who can get New York State out of the tangle in which it has so long been." He then responded, "All right, thank the Governor and tell him my answer is 'Yes'." So President Draper became the first Commissioner of Education under the new unification act and held that post with distinction until his death.

All these experiences are as fresh in my memory as if they had taken place a few months ago. It gives me the greatest satisfaction to look back upon them and to recall the many and lasting friend-

ships which I then made, as well as to take some satisfaction in the opposition which we so frequently broke down. The moral of all this is that it is perfectly futile in dealing with any public matter to sit down and complain and say, "Something ought to be done! This is an abuse which ought to be ended. This is an improvement which ought to be made." Stop talking about it and stop complaining. Go and do it. We are living in a democracy—still! Do not wait to know what Smith or Brown or Robinson thinks about it. Do not content yourself with passing resolutions and sighing mournfully, but go and do it!

It is perfectly easy to deal with the American people if you will deal with them honestly and fairly and frankly. They have become so suspicious that it is somewhat more difficult today to do the sort of thing I am talking about than it was when those things were done. That is due to the suspicious nature which has been developed among the people by their political experiences of the past generation.

It is the community which is in charge of the schools. The Board of Education is the servant of the community. The principals and teachers are servants of the community. The program of the work of the school is under the control of the community. They can wreck it or they can improve it. It is for the community in our democracy to provide for the school its support—not merely the financial basis upon which its work rests but the intellectual basis, the moral ideal, and the effective administration which are necessary to the accomplishment of its purpose. Any of you who contribute to those are aiding the public to achieve its highest ends.

Federal Support for Public Education*

By PAUL R. MORT

Director, Advanced School of Education, Teachers College

IT IS my purpose (1) to review the facts which compel me to believe that extensive federal aid to education is a necessity, (2) to point out the methods of avoiding the dangers from increased federal aid, and (3) to propose a program of federal support to which certain researches point. The facts, the avoidance of dangers, the program required—these are the three phases of the problem with which I shall deal.

First I shall deal with the *facts*—the extreme seriousness of present conditions—the impossibility of correcting them without *federal aid.* The first series have to do with our general *social*, *civic*, and *economic* welfare.

NECESSITY FOR FEDERAL AID

Social and Economic Welfare. Our social and economic welfare demands a more adequate educational program than the poorer states can provide. The social and economic benefits from good education are not limited to the communities in which the education takes place. They are, on the contrary, widely diffused throughout the nation. This holds as well for the social and economic losses from poor education. Whether we look upon it on the positive side of increasing our social and economic well-being, or on the negative side of removing festering sores in our social, civic, and economic system, the conclusion is the same—that a satisfactory foundation of education should be provided in every community. Economists have made much of the positive influence of education on economic well-being. Sociologists have pointed to its advantages from the angle of the general social welfare, but the extent to which we would be justified economically and sociologically in supporting education has been given all too scant consideration. We have no measures as yet of the degree to which

* Address given before the General Session of the Department of Superintendence, St. Louis, Mo., February 24, 1936.

increases in expenditure on education are accompanied by proportionate economic and social returns. Most of the facts which have been collected deal with the negative side. They give some indication of the danger lines below which we should not dare to go.

Much has been made of the fact that inadequately educated persons cannot be barred from migrating from place to place. Coupling this fact of mobility of the population with the fact that, according to present birth rates urban communities cannot perpetuate themselves, we see that there is operating a great magnet that draws the less well-educated population from the rural areas and villages. It brings into our cities an undue proportion from the marginal and submarginal economic areas in which the educational programs are the poorest. The migration of the Negro population to the North is a dramatic example of this. The principal of a junior high school in Harlem recently told me that the parents of 93 per cent of his children were migrants from other states. I think we have been unduly impressed by those individuals from the poor areas who by dint of sheer native ability and good luck have risen to a high place in their communities. We might have a better perspective if we were to take the trouble to discover to what degree this group is represented on the relief rolls and in our courts—to study the American slums in our large cities. On the economic side, limited educational opportunities are associated with limited standards of living. This at one and the same time reflects limited consumption and limited will and ability to produce. It is reflected in the economic status of others, not only in the poorer communities, but also in the abler communities.

Finally, great geographical groups of people with limited education influence the economic and social pattern of the nation at large. They provide pliable support for selfish pressure groups that hope to mold to their own advantage the civic as well as the social and economic pattern of the nation. There would seem to be no question that all people, rich and poor, are vitally concerned with the establishment of a minimum of educational opportunity at least high enough to safeguard ourselves against dangers. There exists much evidence that we can well afford to support a foundation program even greater than this because of its general economic benefits alone.

I shall now show that this result cannot be attained without federal aid.

Lack of Ability in Poorer States. The poorer states do not have the ability to support an educational program good enough to safeguard us against social and economic ills. The great differences in the abilities of states have long been known. It has been contended that they are not large enough to be disturbing, that they could be offset in the poorer states by reasonable effort. Studies by Norton's students, Ashby and Chism,[1] have shown that we may not have any such comfort. They show that the entire yield of a reasonable state tax system would be taken to support a defensible foundation program in the poorer states. There would be no funds for other public services unless they were derived from confiscatory taxes.

Another fact, all too little appreciated, is that local initiative is now languishing in our rich states as well as in our poor states.

A Potential Boon to Local Initiative. Overburden on property tax handicaps local initiative in practically all states. The removal of the property tax overburden by states is slow and difficult. It can be speeded up throughout the nation by federal participation in school support. Interestingly enough, many people have thought of federal support as being somehow or other inimical to local initiative and thus to the experimental process upon which we depend chiefly for the adaptation of our school to new needs. Seeing the very real dangers, they fail to assess the potential benefits. This is in no small part due to the failure to analyze the support phase of local initiative. Recent analyses have shown that where the tax used to support local initiative—almost universally the property tax—is carrying more than its fair share of the burden of all government, local initiative is handicapped. It carries a millstone about its neck. This millstone can be removed by central support. Local initiative can be restored to health.

That federal aid may be a boon to local initiative has been one of the important considerations in the state studies of school finance during the past decade. State aid to education provides a useful channel through which non-property taxes collected by the central authorities may be passed back to localities to relieve the property tax and thus to rehabilitate local initiative. But the process of broadening the tax base has not been free from restrictions. Difficulties in administration

[1] Ashby, Lyle W. *The Efforts of the States to Support Public Education as Related to the Adequacy of the Support Provided.* (To be published.)

Chism, Leslie. *The Economic Ability of the States to Finance Public Schools.* Contributions to Education, No. 669. Bureau of Publications, Teachers College, Columbia University, New York, 1936.

of newer taxes among states have arisen. A vast amount of time has been spent by tax experts in attempting to work our reciprocity arrangements and uniform plans among the states. Recently considerable support has developed among tax experts for a process of short-cutting these difficulties by utilizing the federal government as a tax-collecting agency. There is little doubt that, if properly handled, it would bring measurable relief to the property tax upon which local initiative now depends for support. This would quicken the operation of local initiative and hence the experimental adaptation of our schools to new needs. We should not minimize the difficulties of our poorer states and of the poorer communities in our abler states. But we should not be blind to the need, all up and down the line of ability, for enlivening local initiative. It is on this initiative that our schools place greatest dependence for long-time educational efficiency.

We have seen that federal aid is necessary for the establishment of a defensible minimum program of education and that, if freed from control, it will rehabilitate our languishing local initiative, in states rich and poor. But is it constitutional?

CONSTITUTIONALITY OF FEDERAL AID

A review of the evidence with respect to the constitutionality of federal aid seems to leave little doubt with respect to this point. Dean Russell's analysis of Madison's Journal of the Constitutional Convention indicates that federal interest in education was considered in the writing of the welfare clause into the Constitution. Furthermore, the Federal Government has participated in the support of education since Ohio was admitted into the Union in 1802. There has been a tendency in recent years to discount the implications of the federal land grants to common schools—to claim that they were made as a means of encouraging purchases of federal land. It does not seem to me in any degree to lessen the significance of even the early federal land grants to schools to say that they served immediately practical purposes. However this may be, it is a fact that with the passage of time and the corresponding decrease in federal lands, the land-grant policy became continuously more liberal. Nor have questions been raised concerning the constitutionality of later grants which did not involve federal control of state policy. If there is a tendency to question the constitutionality of the Smith-Hughes Act due to the recent A.A.A.

decision of the Supreme Court, this is only an additional argument that such control features should be avoided over and beyond the other arguments to be presented later and which by themselves are entirely competent.

DANGERS OF FEDERAL AID

Hampering Local Initiative. There are two dangers which we can and must avoid in the development of a federal support system. First, the life-giving force of local initiative must not be hampered. It can be safeguarded if we will consistently refuse to transfer discretionary power to a central authority—if we distribute federal aid on a mathematical basis; if we write the law free from compliance provisions; if we make these safeguards feed local initiative.

But, you say, there are those who will not be content to free federal support from control. This is true. They will deny that the job can be done equitably unless discretion is granted to central authorities. These are they who throw up their hands in despair at the sight of a little educational arithmetic. Not willing to examine the pragmatic test they will damn it with such epithets as "too complex." They will say, "Give us something simple that we can understand." Interestingly enough, I have never yet met this question from legislators, men who know that you must have arithmetic even to build a bridge or to mix paint. Such mathematical formulas for federal aid are now available. Complex in their development—yes; but who worries about the complexity of the formulas of stress when he crosses a bridge? Or driven from this position by the facts, they will shift positions and demand discretionary power for its own sake as a means of getting quick reform. Or they will insist that no aid be given unless their own favorite reforms are made mandatory. This condition is attractive to all of us, and is therefore a real source of danger. Somehow, when it comes to our own pet reforms it is difficult to use patient processes. We reach for the surgeon's knife of coercion; we shrink from the slower therapy of democratic processes.

Tempting as it may be, we must beware of the counsel that would place the money in the hands of an authority at Washington which would erect specifically the hurdles to be jumped by the states and would seek to assure for every dollar spent a dollar's worth of improvement. Its attractiveness makes it dangerous.

What a splendid thing it would be if at one sweep we could eliminate the slums of American education! That person lacks imagination indeed who cannot become enthusiastic over this possibility. With more thought on the subject we are likely to become skeptical whether such results obtained by coercion would, in the long run, be most effective. We are likely to doubt the ability of any central board, however benevolent, to decide from afar what is best for every isolated community. We must, instead, insist that the decision on how much money a state obtains must *not* be left to the judgment of any central group. It must, rather, be determined mathematically. This would avoid one type of discretionary power which provides an open door to unpredictable controls.

Having taken this important step away from control, we should not dally with the idea of requiring certain improvements which nearly everyone agrees are desirable: a minimum expenditure on schools for Negroes, a minimum school term, a denial of the right to lower present expenditures by states and localities, and the requirement of larger rural school districts. These we might not find particularly objectionable since the control involved is delimited. Unpredictable controls are not likely to arise. But we may well ask ourselves why it is necessary for Congress to tell the states that these simple minima are desirable. What state is there that does not have in its educational and lay leadership an understanding of such simple correctives as have been mentioned here? Are not such controls superfluous? All that is really required is a statement of the general purposes in the act, a periodical survey of what is happening in the states as related to these purposes, and a report to Congress and to the public of how well the intent of Congress is being carried out. For an effective expenditure of funds we may depend upon the fact that inefficient use will tend to keep the modest beginning program from expanding or may even result in its repeal.

To safeguard local initiative, we must not be afraid of the arithmetic by which an equitable distribution of federal money can be made free from central control. And we must *resist* the temptation to write conditional hurdles into the law. I believe that we shall find ourselves scientific enough and patient enough for this. We shall not lack reminders of the dangers—let us heed them. Let us *feed* local initiative with federal support. Let us *protect* it from federal control.

Tax Limitations and Central Support. The second danger is that we may permit the tax limitation movement to get the upper hand. There is a movement at the present time which seems to be sweeping the country. Its purpose is to limit local taxing power through tax limitations for current expenditures, maximum expenditure limitations, or state budgetary reviewing bodies. I do not believe this movement is in any way a product of the increased interest in central support. Some of the bitterest fights and greatest losses have occurred in states which have done little or nothing in decades to improve their state support systems. But there can be no question that the forces back of this movement are not friendly toward expenditures either locally or by the state. They are closely allied to those which are fighting for reduction of state support. What would be the result in the state of New York, for example, if they should at one and the same time bring about a state-wide limitation on taxation and a drastic cut in state aid? If this tax limitation were a constitutional matter, the communities would be in a strait jacket until such time as a long-fought battle for the elimination of the tax limitation or the restoration of state aid could be won.

Let us apply this same reasoning to a hypothetical national situation. Let us picture the condition that would exist if we had substantial federal aid and if associated with this we should permit the imposition on states and localities of drastic tax limitations. Should we not then be in a dangerous degree susceptible to serious setbacks in our educational program in case any national force should be instrumental in bringing about a very drastic reduction of federal support?

I do not believe increase in federal support in itself would strengthen this tide that is upon us, nor do I believe the results of such a combination of circumstances would be particularly worse than the situation that is now developing. It would be more dramatic. It emphasizes the necessity to resist these limitations in no uncertain manner. Much loss has already been sustained because we, the educational group and the lay friends of education, have been altogether too inert. If a concerted fight for federal support were to have no other result than to awaken us to a realization of the force and the drastic effects of this engulfing tide of limitation, it would certainly be worth its cost.

A PROGRAM FOR FEDERAL SUPPORT

Studies have recently been completed which are designed to diagnose the needs and to prescribe the remedy. They propose as a defensible minimum a program of the type that could be purchased for $60 per elementary pupil and $100 per high school pupil in the year 1930-1931. This would be about the average for such states as Iowa, Ohio, Colorado, and Minnesota. It is approximately at the bottom of the expenditure scale in such states as New York, New Jersey, and California. It is near the top in such states as Alabama, North Carolina, and South Carolina. It would represent improvement in educational opportunities for about half the children in American schools. These studies show the feasibility of federal collection of sufficient revenues to pay for half of this program, outright, in all of the states, to be used as the states see fit, to expand education or to rehabilitate the financial structure of local initiative through relief of the property tax burdens.

The eventual program would provide, then, for the outright payment of half the cost of the $60 program by federal grants and the equalization of the burden of the other half by additional grants. States could then proceed with their state reorganization of school finance without the difficult struggles involved in competing with each other and with the Federal Government in the levying of new-type taxes.

As a first step these studies propose going one-fourth the way. They propose the use of a program costing $15 per elementary pupil and $25 per high school pupil. This is somewhere near the 1930 minimum for white children in the poorest states. It would force but little expansion in these states. It would give them financial leeway to build on their present low foundations. As they respond to this stimulus the federal program should gradually be raised until in a decade or so we have reached the higher level proposed.

Mathematical bases for determining need and ability have been arrived at. The need measures correct for population density, for differences between elementary and high school costs, and for cost of living. The ability measures are based on economic data regularly collected by federal agencies. The resulting measures are equitable. They can be written into the law. They require no discretionary power in Washington. No unforeseen controls, the fruits of discretionary power, can grow out of them.

The amount required by the first step is approximately $300,000,000; by the ultimate program, $1,500,000,000.

These studies are reported in detail in a comprehensive volume now in press.[2] They take the whole problem of federal aid, scan it in detail, turn it over and look at the bottom of it, and then find desirable a program of which this is a summary. They consider the problem of controls in detail and reach the conclusion that there should be no controls—no compliance provisions, save a report of use after the fact, for the information of Congress, the public, and the profession. The program would not interfere with present aids until in its final stages it would supersede them. States would be free to use the funds for any educational purposes.

The report recommends also liberal federal aid for central housing of rural schools somewhat along the lines of the Missouri law.

Results of the First Step. In appraising the potential effects of the major recommendation, we must consider what it will do in raising present standards and how it will promote the free flow of local initiative.

The first step would make possible the improvement of the poorest schools. In addition, it would free local taxes from extreme burdens in these communities. Experience shows that those who have been willing to tax themselves in extreme degree for a meager education will be willing to tax themselves moderately for better education. The improvement of the schools will therefore not be limited to the improvement of those below the $15 minimum. It will be found everywhere—in poor states and in able states.

When this improvement is compared with the need, it is small indeed. It leaves the poor schools not so poor, but far from what the national welfare demands. It makes only a beginning at the needed shoring up of local initiative all up and down the line of ability in communities and states. We will hardly meet the eventual need, however, without starting somewhere. During the next few years we should make the extended nature of the need commonplace information not only with the profession but with the lay public. We should center our interest on this immediate step only as a step and not as the ultimate objective.

[2] *Federal Support of Public Education.* Made under the Direction of Paul R. Mort and under the auspices of Columbia University Council for Research in the Social Sciences. Bureau of Publications, Teachers College, Columbia University, 1936.

THE ADEQUACY OF THE ULTIMATE PROGRAM

Even the ultimate objective for a defensible foundation program for the United States will appeal to many of my hearers as rather low. At first thought the drive toward a foundation program costing approximately $60 per elementary pupil and $100 per high school pupil will seem modest to those of you who come from communities which are spending double this amount or more. The significance of this ultimate program lies not in its extent as a standard for better schools, but as a minimum for our poorer schools. There is hardly a state in which a $60 program would not represent improvement in some schools. In our states of average ability it would represent improvement in approximately half the schools. In our poorest states it would represent improvement in all schools.

This would be true if it were viewed from the angle of the program actually purchased. From the angle of financial support for the entire program, the adequate financing of a $60 program would have a salutary effect on the financial bases for all states, rich and poor. It would represent not only improvement of the minimum program of our poorer schools, but a strengthening of local initiative even in the abler communities.

The degree to which this is true may be seen by considering the states which are at the top of the national expenditure scale—New York, New Jersey, and California. The $82 million which the ultimate program has for New York would doubtless be partly reflected in reduction of some state taxes now used to yield the present $122 million of state aid, but no small part of it should be used to further reduce local contributions to a more adequate minimum and thus to strengthen local initiative. The $34 million for New Jersey would go almost twice as far in attaining the equalization and local initiative objectives as the program with which the legislature is now struggling. The $53 million for California would play a significant rôle in meeting the local initiative objective in that state.

Let your own imagination play with the effect of $104 million for Pennsylvania, $78 million for Ohio, $45 million for Indiana, $72 million for Illinois, $43 million for Missouri, $33 million for Kansas, $23 million for Nebraska, $94 million for Texas, $16 million for Colorado, and $25 million and $27 million respectively for Arkansas and South Carolina, which now spend less than two-thirds of this amount.

I shall try to portray the significance of the $60 minimum proposed for the ultimate program.

What kind of program will $60 buy? Recent studies of school systems in Delaware, Pennsylvania, New Jersey, and Maine throw some light on this question. Before reviewing the available data I wish to remind you that it is impossible to give any definite idea of what we will be able to buy with $60 per pupil by the time the schools of the nation attain this level. At best they cannot be expected to attain it short of a decade. The immediate program recommended would provide only one-fourth this amount as a minimum. The practice in schools operating on the $60 level today would not be a certain guide. In even a decade many of the practices now being worked out experimentally in the best schools of the country will be universal practice in the schools of the lower level recommended as the ultimate national minimum. Perhaps the most accurate picture could be obtained by observing the best practices in the present-day $60 schools.

The study of forty communities in Delaware, New Jersey, and Pennsylvania during the spring of 1935 showed that schools on the $60 level were predominantly of the traditional type. The buildings were fairly good and reasonably well cared for. The curriculum followed was usually that provided by the state, but the textbooks themselves were the strongest influences on the courses in the elementary schools and almost the sole determiners in the high schools. Standardized tests were used some time during the year, but more for the purpose of general appraisal than for the study of individuals. Supervision fell more into the classroom visitation classification than into the category of constructive helpfulness through analyzing individual needs, assisting in improving the course of study, and helping in the creation of new materials and more effective teaching settings. The curriculum included art, which in many instances had got away from the old stereotyped still-life or design patterns. In very few classrooms were rows on rows of identical drawings on exhibit. The music and art were generally taught by special teachers. As a rule, classroom procedures followed the old subject recitation lines with little attempt to get the subjects out of their own logic-tight compartments. But in nearly every school there was at least one teacher who was following the less stereotyped procedures typical of the higher expenditure schools studied. Occasionally there was evidence of attempts to blend the

school and the community into a more lively curriculum. Field trips were taken. Projects drawing on the community's resources were pursued.

The primary grades were still giving major emphasis to reading, but great inroads were evident on the old, uninspired belief that vast numbers of children who had spent a year in learning to read could not progress in reading by going along to the second grade with their group. Social studies played a considerable part in the work even of the primary grades. Classrooms throughout showed evidence of the belief, strangely rather foreign to most schools of a decade or so ago, that children may have some use for books and other reading matter apart from their textbooks.

In the high schools there was some breadth of opportunity and considerable emphasis on guidance. A well-planned guidance program, so essential to a modern high school, was a rarity, but, however, it was present, in its beginning stages, in practically all the high schools. The social studies showed a tendency to leave the beaten paths and dip, even though slightly, into problems of present-day citizenship. Orchestras and bands provided opportunities to those seeking the cultural advantages which musical performance affords.

There was usually a well-appointed play field and a gymnasium. In approximately half the schools fairly satisfactory physical and dental inspections were made systematically, and in some instances a follow-up by means of school nurses. Where such service was provided, the nurse's office was an improvised cell, but poorly equipped, and the load carried was usually too heavy. But it is nevertheless a sign that the excellent work done in higher expenditure schools is having a salutary influence.

In the Delaware-New Jersey-Pennsylvania study, investigation was made of the time at which these newer developments came into the schools. A surprisingly large number of them were introduced during the last decade. They are signs of a metamorphosis that will markedly change the nature of a $60 program for the better by the time when, even under the most favorable circumstances, a $60 program becomes an established national minimum.

To many of you the conditions I have described are poor indeed when compared with the schools on the high expenditure levels. Certainly it would be more inspiring if we could look forward to a national

minimum school with small classes, teachers of exceptional ability and training, special workers to assist in studying the needs of pupils and community and in ministering to these needs, a wealth of materials of instruction, books as plentiful as children need, failures and misfits eliminated because the school knows where every child really is and how to stimulate his development from wherever he is without recourse to barbaric methods. But to those who know the poorer conditions which the $60 program can practically replace in a reasonably short period, the objective is vastly worth striving for. This is particularly true if it is realized that the experimentation afforded in the better schools is rapidly influencing the practices even on the $60 level. This $60 level may not provide very good conditions for experimentation, but there is evidence that it can provide teachers so selected and trained as to be able to take advantage of progress made in those schools which represent nearly ideal conditions. This is perhaps the most significant characteristic of the program proposed as the ultimate defensible minimum.

Some idea of the nature of the average schools which are now operating below the $60 level can be obtained from the Maine school finance study.[3] Among the schools studied was a group operating at approximately $27 per pupil. This is more than double the expenditure of a considerable number of schools for white children and of a vast number of schools for Negroes. On the $27 level, the school buildings were poorly lighted, poorly heated, poorly equipped, poorly maintained, barren in appearance. Many elementary buildings were heated with stoves. The toilets were filthy, the halls disorderly. Many high school buildings made no provision for any but academic work. Supervision was sketchy and inadequate. The result was reflected in the thin program and in the shallow, if earnest, teaching. Schools were stereotyped, with everything organized on a class-recitation basis.

In many of these schools a majority of the pupils were seen standing about idle during periods assigned to "physical education." Supervision consisted of preventing disorder, snowball throwing, and so forth. Gymnasium and equipment were not to be found. In the high schools on this level, athletics were an actual danger; in many cases boys were not properly examined for ascertaining their fitness to take part. The investigators found as many as 25 per cent absent on account of common colds.

[3] *The Financing of the Public Schools of Maine.* The Maine School Finance Commission, 1934.

On the low level, the lack of books and the hunger for them was almost unbelievable. Many children had access to none but their textbooks, except perhaps at home or in a friend's house. In one small secondary school an encyclopedia was purchased. Within the year it was as thumbed and worn as if it had been there a decade. Clearly, children were deprived of the chance to develop tastes and habits which would stand them in good stead in their leisure hours now and in the future.

The schools described here are fine institutions compared with some of the neglected schools which I have visited in other states. The good feature of these schools was that they were presided over by teachers who, for the most part, had good intentions, if little training, sketchy materials to work with, and practically no expert assistance. These schools provided a place where children who had by some means or other obtained a drive to learn and had the ability to master the typical curriculum, could have at least a modicum of contact with books. The educational opportunity is really largely limited to this group. The misfits remain misfits. With all the good intentions in the world, the poorly trained teacher, with nothing but a few textbooks and no expert supervisory assistance, obtains meager results. Schools operating on the ultimate national foundation level are vastly superior when measured in terms of the percentage of children provided with even an awakening educational opportunity.

To get a notion of the actual minimum conditions one would have to consider the deplorable situations under which vast numbers of children receive their schooling. The worst conditions I have observed were in some of our separate schools for Negroes. Some of these schools operate but a brief period each year. School buildings are poorly lighted, lacking in equipment, and designed neither as a protection against inclement weather nor as an educational laboratory. Teachers are hardly more than literate. The mass of children packed into a classroom await their turn for the brief attention of the teacher. In some instances as many as four or five children are found crammed in one seat, attempting to share a single dilapidated textbook. In other cases a half-dozen children are found without even this much aid to learning, patiently waiting for something to happen. In such schools not even the children with unusual drive and ability are able to make progress.

In reviewing this evidence purely from the standpoint of what a $60 minimum means educationally, it has seemed to me that such a program provides a cause in which the profession and the lay public alike can join with the zeal of crusaders.

CONCLUSION

But there is more to the proposed financial program than appears here. The establishment of a defensible national minimum would be of little consequence if once attained it were to remain static. An adequate financial program will have within it the seeds of adaptation and adjustment. The proposal for granting substantial aid to all states from taxes collected by the Federal Government will relieve the present overburdened local taxes and thus feed local initiative. It will strengthen the dynamic adaptive elements—the vitamins of our school systems.

The minimum program side of the question is static. The local initiative phase, much less well understood by the profession and the public at large, is a moving, dynamic element. In my own thinking I cannot see that one is of any greater importance than the other. I want a decent program of education for every boy and girl in America as soon as it can be obtained, but I want in that program the seeds of change and adaptation which will keep it from becoming obsolete. Let us by all means provide for the national financing of a decent foundation program of education, but let us at the same time build into the financial structure the great adaptive force of local initiative.

How Wide Is the Gap Between Principle and Practice?

By WILLIAM A. McCALL
Professor of Education, Teachers College

THIS article will show that teaching a group of teachers the principles of the psychology and pedagogy of reading did not make these teachers more effective teachers of the speed and comprehension in reading. This suggests, though it does not definitely prove, that we cannot hope to produce good teachers by providing them with general principles of teaching and trusting them somehow to translate these into effective procedures. The findings in the Doctor of Philosophy dissertation entitled *Measuring Efficiency in Supervision and Teaching*[1] point in the same general direction. Thus evidence is accumulating that the gap between principle and practice is much wider than we have generally supposed, and too wide to justify much of the teacher training given in normal schools and teachers colleges.

A principal of a private school divided his teachers into two groups of approximately equal teaching ability. He paired two teachers in each grade from Grade III through Grade VIII. Initial tests were given as shown in Table I. Then, unknown to the control teachers, he invited outstanding specialists in the psychology and pedagogy of reading to hold weekly conferences with the experimental teachers with a view to helping them to be better teachers of reading skill. These conferences were continued throughout the year. At the end of the year final tests were administered. The growth in reading in the experimental classes was calculated and compared with the gains made in the control classes. The results of these calculations are shown in Table I.

Due to the small number of pupils in each class and to the unavoidable failure to administer certain tests in certain grades, some statis-

[1] Crabbs, Lelah Mae. *Measuring Efficiency in Supervision and Teaching.* Contributions to Education, No. 175. Bureau of Publications, Teachers College, Columbia University, New York, 1925.

TABLE I

COMPARISON OF THE GAINS MADE BY THE EXPERIMENTAL AND CONTROL GROUPS IN THE VARIOUS READING TESTS

Test	Grade	No. of Pupils		Initial Mean		Initial Mean Per Cents		Mean Gain		Dif.	P. E. Dif.	Dif. / P. E. Dif.
		Exp.	Cont.	Exp.	Cont.	Exp. / Cont.	Cont. / Cont.	Exp.	Cont.			
						%	%					
Thorndike Reading Scale Alpha 2	III	14	17	6.6	7.6	86	100	5.6	5.6	0.0	.74	.00
	V	21	18	23.7	23.7	100	100	2.5	1.7	0.8	.48	1.66
	VI	25	20	26.7	25.8	103	100	2.5	2.2	0.3	.66	.45
	VIII	21	20	30.4	32.1	94	100	1.2	1.4	− 0.2	.50	− .40
Thorndike Vocabulary Scale	III	16	16	23.0	30.7	74	100	12.5	19.2	− 6.7	2.9	−2.31
	V	22	21	83.1	75.8	109	100	4.1	7.4	− 3.3	1.4	−2.35
	VI	24	23					1.8	4.7	− 2.9	.80	−3.62
	VII	19	17	91.5	93.5	97	100	− 0.1	− 1.9	1.8	.74	2.43
	VIII	19	25	94.7	96.1	98	100	1.0	2.3	− 1.3	.58	−2.24
Monroe Reading Rate	IV	21	20	73.4	73.4	100	100	16.7	15.9	0.8	3.4	.23
	V	20	24	107.6	104.5	102	100	19.1	23.6	− 4.5	3.2	−1.40
	VI	28	24	98.3	104.0	94	100	17.3	21.8	− 4.5	4.0	−1.12
	VII	15	15	94.5	120.6	78	100	19.6	6.4	13.2	5.7	2.31
Monroe Reading Comprehension	IV	21	20	9.8	10.9	89	100	4.0	3.6	0.4	0.8	.50
	V	20	21	118.9	125.4	94	100	7.5	6.5	1.0	0.7	1.42
	VI	28	24	238.6	240.8	99	100	6.0	8.0	− 2.0	1.5	−1.33
	VII	15	15	249.0	305.0	81	100	5.4	3.2	2.2	1.9	1.15
Starch Reading Speed	III	14	16	1.6	1.6	100	100	1.0	1.3	− 0.3	.27	−1.11
	IV	18	17	2.8	2.7	103	100	0.5	0.3	0.2	1.3	.02
	V	23	21	4.3	3.4	126	100	0.0	1.0	− 1.0	.19	−5.26
	VI	24	18	4.4	5.2	84	100	1.0	0.4	0.6	.19	3.15
	VIII	21	20	5.0	4.8	104	100	1.1	1.4	− 0.3	.25	1.20
Starch Reading Comprehension	III	14	16	15.8	17.4	90	100	6.8	11.5	− 4.7	2.3	−2.04
	IV	18	17	24.7	32.1	76	100	5.1	4.9	0.2	1.7	− .11
	V	23	21	38.1	43.0	88	100	10.8	7.6	3.2	3.1	1.03
	VI	24	18	42.0	42.0	100	100	21.8	9.2	12.6	3.8	3.31
	VIII	21	20	63.0	58.0	108	100	10.4	9.0	1.4	2.9	.48
Mean						95.2	100					− .15

Note. Exp. = Experimental group; Cont. = Control group.

tical niceties, such as the exact equating of experimental and control pupils, have been dispensed with. But while classes were not paired pupil by pupil and test by test the grand means of 95.2 per cent for the experimental and 100 per cent for the control groups show that when all tests and classes are considered the two groups differed on the average only about 5 per cent. Since the two groups in each grade were considered to be about equally bright, there is no reason to suppose that this small difference is advantageous to either group; for the important matter is not that the two groups start with equal initial means but that they start with equal capacity to grow.

The conclusion of the whole matter is revealed by the grand mean of — .15. This tells us that the experimental group actually failed to gain as much as the control group. A cynic might conclude, therefore, that the best way to improve teachers in service is to keep them from becoming contaminated by specialists and books by specialists! In view of the crudities in the experiment and the previous excellent training of the teachers, a truer, and certainly a more charitable, conclusion is that specialists are really quite harmless! The writer pondered this discouragingly small gain from so much effort, and determined to cease experimenting with such conventional and fruitless methods of improving teaching efficiency, to discard the time-honored methods, and to invent a new approach to the teaching of reading and other such skills.

The first effort to solve the problem involved the construction of the nine forms of the Thorndike-McCall Reading Scale, the invention of Reading Age and Reading Quotient comparable to Mental Age and Intelligence Quotient, the utilization of these to calculate a pupil's estimated Reading Age or objective for the end of the year, the monthly measurement of his progress toward that objective, and weekly informal tests. The details of this procedure are given in *How to Measure in Education,*[2] and in an article by Dransfield,[3] who has shown that this invention induced marked progress on the part of pupils, unless we are to make unreasonably large allowance for their merely becoming "test wise."

Since monthly and weekly tests yielded such favorable results, it

[2] McCall, William A. *How to Measure in Education.* The Macmillan Company, New York, 1923.

[3] Dransfield, Edgar. "A Technique for Teaching Silent Reading." *Teachers College Record,* Vol. 26, pp. 740-752, May 1925.

occurred to the writer that results might be even more favorable if the monthly standard tests were supplemented by daily, informal, objectively-scorable, yes-no reading tests based on the pupils' common textbook in reading, geography, history, and the like.

The writer conducted, in a large New York City public school, an equivalent-group experiment to test the worth of this idea. Two large classes in each grade from III through VIII were equated. Other customary precautions for equivalent-groups experimentation were observed. All measurements and calculations leading to a conclusion were made and the study was filed to await description and publication. During the writer's sabbatical leave, the study disappeared from the file. Diligent search and inquiry have failed to discover the data. Hence the writer is able to report only the gross conclusion that the experimental groups made startlingly greater progress than the control groups—about twice as much.

Then it occurred to the author that the procedure could be simplified and probably made more effective by combining the daily feature of the informal tests and the standard-test feature of the monthly tests, thus providing a daily standard test lesson. The Standard Test Lessons in Reading[4] for the elementary school, of which some hundred thousand have since been used, is the result of this combination, and so is the *Experiments in Reading*[5] recently published for the junior high school, and so also, in part, is *You and College*[6] for college freshmen to be published this spring. In addition, the writer knows of several other books in preparation which employ the same techniques.

Finally, it was the writer's conviction that principles, to be of real help, must be embodied in functioning procedures, which led to the development of the Teachers' Lesson Unit Series. In this Series has been published the story of how some two hundred specially apt teachers have translated educational principles into teaching procedures. Experimental evaluation of their success has yet to be made.

Thus, little by little, in certain areas, the gap is being bridged between principle and practice, precept and example.

[4] McCall, William A. and Crabbs, Lelah Mae. Standard Test Lessons in Reading, Books II, III, IV, V. Bureau of Publications, Teachers College, Columbia University, New York, 1925.

[5] McCall, William A., Cook, Luella B., and Norvell, George W. *Experiments in Reading*, Books I, II, III. Harcourt, Brace and Company, New York, 1934.

[6] McCall, William A., Balch, Marston, and Herring, John P. *You and College*. Harcourt, Brace and Company, New York, 1936.

Needed Improvements in the Teaching of Statistics*

By HELEN M. WALKER

Assistant Professor of Education, Teachers College

THIS year, by actual count, there are in the colleges and universities of the United States nearly one thousand courses in some form of statistical methods, and there are more than a thousand other courses in which a unit of statistics is included, courses in related fields such as educational measurements, research methods, biometrics, theory of probability, and the like. To maintain that in this country there are one thousand highly trained teachers of statistics, who know both how and what to teach, calls for considerable optimism. The person teaching statistics for the first time is confronted with a great wealth of material which he wants to include in his course, but which is far too extensive for the time available. When he looks about for suggestions concerning the appropriate emphases, methods of clarifying ideas, standards of work, goals of instruction, or psychological analyses of student difficulties, he finds that little has been written for the teacher except the regular textbooks.

Toward what end should a course in statistics be directed? Upon the answer given to that question depend all decisions as to selection of content, choice of emphasis, selection of students, prerequisites. At present a course entitled "Statistical Methods" may mean almost anything, and there is even no assurance that "Advanced Statistical Methods" implies a stiffer course than "Elementary." Under the same title, one teacher may give a course which is almost entirely algebraic; another may emphasize technical efficiency and economical methods of computation and the organization of data; another may spend most of the course on sources of data and their presentation in graphic and tabular form; another may direct his attention chiefly to the use and interpretation of statistical data in

* A paper read at the meeting of the American Statistical Association, December 1935, New York City.

particular situations. Granting that each individual teacher must formulate the goals for his own teaching, I wish here to submit the results of my own thinking on that subject.

PLANNING THE STATISTICAL COURSE FOR STUDENTS AT VARIOUS LEVELS

We cannot consider how to teach any subject without first considering who should study it. To form a reasoned answer to the latter question we should take a realistic view of the amount of statistical work which needs to be done in the world today, either as a primary end or as subsidiary to some other undertaking. Unfortunately no one knows how many statisticians are needed today; no one even knows how many statisticians there are. Still less does anyone know the number of persons not primarily statisticians who are making use of statistical methods incidentally, but there is reason to suppose that their number is increasing rapidly. In order to say who should study statistics we should also take account of the extent to which statistical ideas have permeated modern thought, so that the intelligent citizen who wishes to understand his world and to read the rapidly expanding literature of whatever technical field he may be interested in, needs to understand and interpret mass phenomena. Considering these things, and recognizing the serious limitations imposed by the time, the capacity, and the previous training of students, I conclude that college courses should be organized on at least three different levels, each level having unique emphases and unique prerequisites. The failure to specify these various levels and their requirements, and the failure of persons interested in one level to appreciate the importance of the other levels, contribute to a general haziness of purpose and slackness of product in our courses.

Highly Selected Students with a Mathematical Background. To provide for scholarly achievement in the field, to train persons capable of directing and criticizing research, we need to set up a rigorous sequence of courses open only to a limited number of highly selected students with adequate mathematical background. The person who is to create statistical theory must of course be a creative mathematician, but in addition he must know thoroughly the content of at least one field in which statistical research is being carried on. The teacher of statistics need not be a *creative* mathematician, but he

must be well enough trained to understand clearly the theoretical work of others. The teacher of statistics also needs to be at home in at least one field of application and preferably in several, he should be familiar with other methods of research, he needs to be well grounded in the psychology of learning, he should know the historical development of his field, and he should also be a fair logician, able to detect the fallacies in an argument based on mass data. At the present time, it would seem that the exacting kind of training needed by such persons can profitably be offered only to carefully selected students in a relatively small number of universities, and the students accepted for such training may be held to the highest requirements. The positions available for such highly trained persons are not yet so numerous but that they can be filled through the work of a very small number of institutions.

Students Who Plan to Do Statistical Research. On a second level, there is need of courses for the person who is to do statistical research with only occasional advice from an expert theoretical statistician, that is, for courses for the person who is able to do creative work in some content field wherein he is an authority, and whose mathematical training extends through elementary calculus. This person needs to know the mathematical assumptions underlying the formulas he uses, and unfortunately very few of our textbooks state these assumptions. He will profit from seeing and understanding the derivation of such formulas, even if he cannot independently reproduce those derivations. He needs to develop clear concepts, and to become sensitive to logical fallacies in the use and interpretation of statistics. He needs also to become efficient in handling the mechanical aspects of tabulation and computation. If all this is provided for, over a range of subject matter adequate to meet those situations most likely to arise in the usual kinds of research, two years of study will be needed even for students who bring with them a fair mathematical equipment. Inasmuch as students of this type are numerous, and inasmuch as few universities now offer a two-year sequence, it is apparent that at present students of this level are not adequately cared for.

These two groups of students have a definite vocational interest in statistics, and presumably have an adequate background for such study. The teaching problems on these two levels are largely problems of securing enough time to do thorough work, and of developing

teaching materials which will facilitate a more complete understanding of the fundamental concepts, principles, and logic of statistics.

Students Who Want a General Appreciation Course. The teaching of statistics cannot be confined to those students who expect to do statistical research or teaching, because today no man is truly educated who cannot think in terms of mass phenomena; no man is fully literate who leaves unread all tables and graphs, all statements of trend and relationship; no man can weigh evidence fully unless he has some elementary notions of individual variation, of probability, of the reliability of observations, of the operation of sampling errors. The real dilemma comes when we are faced—as most of us are—with a large group of intelligent adults previously uninterested in mathematics, each now approaching the top of his own line of work only to discover his mastery of that field blocked by his inability to read its literature, to understand its recent research. Such persons set up a constant demand for "appreciation courses," courses in which algebraic derivation is eliminated, computation is held to a minimum, symbolism abolished, techniques played down, verbal interpretation and logic stressed. The plan sounds eminently feasible and sensible to anyone who has not tried it. Yet we cannot dismiss these intelligent adults with the mere advice that they return to us after studying mathematics for several years.

Not because I think this level of instruction the most important, but because it is apparently the level at which the great majority of statistics courses are now placed, and because its peculiar difficulties are so much more troublesome than those encountered in teaching students with a better mathematical preparation, I shall now speak particularly of ways in which I believe it is possible to improve the teaching of statistics for the student who is not to become a specialist. Many of these suggestions, however, are also pertinent to the early stages in the education of the future expert.

Teaching statistics to admittedly unprepared students is walking a tightrope. On the one hand, we have to make the course an enriching experience, helping the student to understand something of the place of statistical method in the general world of thought, to know its limitations and most common abuses, to know the assumptions on which its procedures rest, and to have a fair competence in the more ordinary techniques. Without some minimum of computa-

tion it appears to be impossible for a student to grasp the pattern of statistical thinking. But, on the other hand, we have to find some means of discouraging these students from too extensive statistical activity. If we overdo the discouragement, we create a distrust of statistical method among intelligent laymen, and so curtail the influence of a method which is indispensable to anyone who wants to rest his opinions on something more solid than first impressions. If we teach our subject too well, and neglect to add the spice of discouragement, we are likely to inspire our students with a very pleasant but spurious confidence in their ability to use methods they do not truly understand, and so we may be responsible for augmenting the flood of studies which arrive at untruth through impressive arrays of meaningless figures. Among the more effective ways of inoculating against overconfidence in the efficiency of applying formulas one does not truly understand, I should suggest a consistent policy of acquainting the class with topics outside the scope of the elementary course, as if one continually opened doors into corridors which there was no time to enter, thus making clear that the territory explored was but a small fraction of that which one really ought to know. This is never comfortable for the class, who would almost always prefer to feel that they had mastered a closed system, and it is a procedure not calculated to make a class enthusiastic over our teaching methods, but it is at least honest. Talking continually about pitfalls and showing how each technique can be misused and misunderstood are also helpful. If a class has its attention drawn day after day to blunders likely to be made, its members will probably develop desirable caution.

IMPROVING THE TEACHING OF STATISTICS

Having now admitted the dangers inherent in teaching too well, I shall now proceed with a clear conscience to discuss ways in which we might teach better than we do.

The Statistical Vocabulary. In the first place, there are certain stumbling blocks to which the teacher has become so habituated that he is likely to forget their presence, but on which the novice is almost certain to trip unless warned. One of these is our vocabulary, both verbal and symbolic. This should be taught specifically, as a foreign language is taught, not left to be picked up casually and incidentally. Our verbal vocabulary is cumbered with a number of expressions

which obscure rather than enlighten, but which have so many years of usage behind them that there is little likelihood that a reform movement will ever be strong enough to uproot them. One illustration of these misleading terms is the phrase "significant difference" which the layman erroneously interprets as an important difference. The word "regression" and the use of the letter "r" as a symbol for correlation become perfectly clear and meaningful as soon as one understands the circumstances under which Galton wrote his paper on "Regression toward Mediocrity in Hereditary Stature." The wretched term, "probable error," ceases to annoy and confuse when explained with reference to its use by the mathematical astronomers of the first part of the nineteenth century. The "normal curve" should be ruthlessly stripped of those pretensions to unique correctness which are falsely accorded it by its misleading nickname. Almost every statistical phrase becomes more meaningful when its origin is traced.

The symbolic vocabulary calls for even more careful attention than the verbal. Those who lack mathematical experience are often uneasy in the presence of symbolism, which they sometimes regard with a respectful fear which amounts almost to superstition. They imagine that a formula has some strange potency, not understanding that it is merely a sentence which is part of a logical argument just as any other sentence is. This difficulty with symbolism in general is of course greatly augmented by the present confusion in the symbolism employed by statisticians. When no two textbooks use precisely the same set of symbols, the least a teacher can do is to select one consistent pattern of symbolism and to hold to that rigorously in his own presentations, never using an undefined symbol, and frequently repeating the definitions of those used. Within this chosen set of symbols, however, the students need specific practice in translating words to symbols and symbols to words. Such practice, instead of consuming time needed for other tasks, will actually save more time than it takes. Even the mathematicians profit by such translation, for all too often their competence in the analytic and computational aspects of research is not paralleled by an equal competence in verbal exposition. To help the student pass from one textbook to another, it is well to discuss the various ways in which any given concept may be expressed, pointing out the essential similarities between these various forms. For example, the four symbols ordinarily used for multiple

correlation are each set up in such a way that one variable is separated from all the others, not two from all the others as in partial correlation. If a student has not grasped this simple but important distinction, he may attach a fictitious import to the use of small or capital letter, to the use of the point or the parentheses. The subscripts used in partial correlation and multiple regression may look ferocious to the student encountering them in finished form for the first time on a printed page. If developed orally in class, where the formulas move and grow before one's eyes, they are not only extremely simple and easy to remember, but their lovely rhythm and pattern can furnish a genuinely aesthetic experience.

The student whose mathematical preparation is either scant or antiquated should be encouraged to spend time on definite background work, in order that he may not waste time fruitlessly in errors, in anxiety and annoyance, in frustration and inability to read textbooks with ease. Definite guidance in such background study is essential, for all topics are not equally important, and the class that is given blanket advice to "study more mathematics" will not make as good progress as the class that is given a blueprint of its shortcomings. My own practice is to give a set of prognostic tests on the first day of the course, and these tests so impress the students that no other motivation is needed to induce them to study the materials suggested. This practice has made the work of the course very much easier both for the students and for me.

Interdependence of Statistical Content. The interdependence of the statistical content is another fruitful source of trouble in teaching. No matter how the course is organized, no matter what sequence of topics is followed, there is of necessity some topic treated at the beginning which can be understood fully only in the light of some other work which comes later. This interpenetration of subject matter is inescapable, but if skillfully handled can be made almost a teaching asset. For example, early in the year when we are practicing the computation of means and standard deviations, I set up, apparently as a checking device, a problem in which the student computes the means and standard deviations of several component groups and of the combined group, and checks the latter by formula. That formula reappears again and again throughout the course almost like a musical motif, and eventually, when we have studied the correlation ratio, this familiar

formula is developed into a discussion of the analysis of variance. But not all instances of interpenetration can be so neatly utilized, and in most cases the only suggestion I have to offer is to let the student in on the situation. He can wait in patience for complete clarification of an idea if he is not disturbed by the fear that his haziness is due to his having missed a connection somewhere.

Clarification of Concepts. To help the students build clearer concepts is one of our most challenging tasks. Some concepts can be clarified through the use of models. The three-dimensional correlation solid built from layers of plate glass by Dr. and Mrs. Walter Durost, which is on display at Teachers College in the same room with the historical exhibit has been of great help in explaining partial correlation and multiple regression. (A description of this model was published in the *Journal of the American Statistical Association* for March 1932 and another description with pictures in the *Kadelpian Review.*) Once after I had spent a good deal of time trying to help a class imagine the surface of normal correlation and its various sections, Miss Dorothy Rowell presented me with an intricate and very useful model which is also on display at the College. For years I have been asking my classes to visualize a series of samples from the same population ranged one behind the other, with their various measures of central tendency not quite coinciding, but scattering far less among themselves than the scores of any single distribution. Last summer Miss Grenafore Westphal decided that a wooden frame, chicken wire, and colored yarn could be used to stimulate the imagination, and so they do. Her model may also be seen by those who visit the exhibit. Another of my students, Mrs. Hajnalka Winer, strung beads in a rectangular wire frame to show a correlation distribution for three variates. The comparison of the variability about the regression line with the variability about the mean is shown in a pair of models made by Mr. C. M. Miles. These are hanging on the wall of the statistical laboratory. In them, two identical correlation diagrams are shown, the frequency being marked by checkers which slide on wires. In one frame these wires are parallel to the line of the means, so that the checkers may be made to pile up in a distribution which has the same standard deviation as the original scores. In the other, the wires are parallel to the regression line, so that the checkers may be made to pile up in a distribution which has for its standard deviation the standard

error of estimate. If all such models which are now scattered about the country in the individual possession of teachers and laboratories could be brought together in one exhibit, or if pictures of them could be circulated in a sort of co-operative exchange, that would be a great help and stimulus to us all. Perhaps I ought to say that we considered inviting other teachers to send in their models for this exhibit, but the responsibility for returning them in good condition was more than anyone felt like assuming.

While some concepts are clarified by the proper visual images, there are others which are so abstract in nature that it is better not to strain after visualization, but to build up the concept slowly by experience as we build up abstract ideas of truth, beauty, responsibility, unhappiness, and so forth. The teacher who is concerned with the way people think will help his class to know which concepts they should expect to bring into clear focus immediately, and which they should expect to see emerging with greater and greater precision as the course develops. For the most part, the exercises in our textbooks and manuals are for practice of techniques or for illustrations of procedure appropriate to a finished piece of work, rather than challenges to students to discover concepts. Exercises can be designed, however, to bring out fundamental principles, and to illustrate universal relationships. A supply of such exercises would be invaluable to the teacher who is concerned not only with competence in technical performance but also with vigor of statistical thinking. A new kind of verbal exercise can and must be developed.

Laboratory Work. Laboratory work in connection with statistics classes is greatly neglected according to a study of college catalogues which I recently carried out with the help of two D.P.W. workers. Out of 2,141 courses for which the catalogue description included some work in statistics, only 359 (about 17 per cent) made any catalogue reference to the provision of laboratory facilities or to instruction in the use of machines. Of the 2,141 courses, just 21 were laboratory courses. Probably we should set up a little propaganda for the enrichment of our courses through the provision of statistical laboratories.

I have mentioned a few of the many ways in which we may do better the things we are already attempting to do. Now I wish to mention something which I fear few of us are even trying to do.

Relation of Statistics and Logic. Statistical method can be so taught as to be at the same time a rigorous discipline and a cultural experience. There is no inconsistency between thorough technical efficiency and broad appreciation of the cultural significance of the statistical way of thinking. After all, the first book on the theory of probability, written by one of the foremost mathematicians of his day, ends in a poem. By what means can we help our students to see the meaning back of technical processes, how use this course so that students go out feeling that windows have been newly opened on the universe? In the first place we may help them see the relation of statistics and logic, help them see that statistical method is not legerdemain which can be substituted for thinking, but is a means of gathering data with which to think, is a periscope with which we can take in a larger terrain than the unaided eye can perceive. Then we can help them understand the nature of statistical inference, which is essentially the generalization to a whole population from facts known to be true for a sample of that population. To understand fully the nature of this inference, the student must become aware of its universality, must see how the historian, the housewife, the merchant, the salesman, the casual conversationalist, continually reason from sample to population, but without the checks and safeguards which the statistician throws about such generalizations. It will be stimulating for him to see how the concept of probability, first sensed by the Greek Skeptics, may illuminate our thinking about nonstatistical problems ranging from the most trivial to the most momentous. It will help him to have each topic oriented with reference to the historical development of the entire field, so that statistical method is seen not as something separate and apart, but as stimulated by and in turn supporting the general development of the physical and the social sciences. If we are interested in logic, here is an excellent opportunity to show the difference between clear thinking based on evidence, and faulty thinking, to show the difference between a necessary and a sufficient condition, between statistical and mathematical induction, between causation and concomitance, between a statement and its converse. We will seize the opportunity to show the fallacy of certain arguments apparently bolstered by statistical data. The historical development of statistical science can be used to great advantage to interpret its cultural significance. Teachers of statistics now need to defend the field not from

its enemies but from its friends. Our subject is sufficiently well established that we need have no hesitancy in pointing out the ways in which it can be abused and in warning against common fallacies and distortions.

It is very important that we state clearly the mathematical assumptions on which each procedure is based, and that we help our students to understand the rôle played by those assumptions in the use of the formula or procedure, to help them see why the use of a formula in circumstances which do not conform closely enough to those assumptions may result in gathering misinformation. But how is one to know whether a formula is appropriate to a given set of conditions or not, if he studies from a textbook that makes no reference to and under a teacher who ignores these assumptions?

CONCLUSION

In summary, then, I consider that clarification of the objectives of our teaching is greatly needed, both collectively and individually. I believe that there are many small devices through which the efficiency of instruction can be much improved when more of us begin to study the thinking of students, begin to use diagnostic tests, begin to classify blunders and fallacies in the hope of preventing them. New types of exercises are greatly needed, but I shall not discuss these lest I impinge on the territory of the next speaker. Undoubtedly none of us are equally competent in teaching the mathematical aspects of statistics, in giving training in the techniques of statistical procedure, in analyzing the applications in particular situations, in stimulating the development of clear concepts, in expounding the logic of the field and detecting flaws in the logic of particular studies, and in perceiving its cultural significance. It seems reasonable to believe that the last three—concepts, logic, culture—are receiving less attention than they deserve.

The Sundial: A Mathematics Unit*

By LAVERGNE WOOD
AND FRANCES MACK LEWIS
Teachers of Mathematics, Horace Mann School, Teachers College

DURING the summer months a family staying in California, another in New Jersey, and a third in Nova Scotia read the time of day from sundials in their gardens. Each sundial was made for that particular garden by a daughter of the house in the workshop of the Horace Mann School in New York City.

These dials were the culmination of a course in mathematics, which had the co-operation of the department of fine arts and the continued assistance of the department of industrial arts. Thirty-six dials have been designed, etched, and set in various sections of the country, each by a member of one of three successive classes of the Fifth Year (eleventh grade). Each of these thirty-six dials is individual; each is ornamented in the way its maker thought beautiful and appropriate, with a distinctive design and a special motto etched on its face. Differences less striking to the casual observer than those in design and motto but more important to the functioning of the dial are differences in the spread of the hour angles and in the size of the angle at the base of the gnomon, or piece of metal which casts the shadow.

During their work on this unit the girls came to understand that although the same clock serves its owner in Maine and in Florida, the same sundial cannot be used in both locations, because a working sundial must be constructed for the latitude for which it is intended. For this reason each sundial presented a unique mathematical problem. While each is the product of imagination and careful work on the part of the girl who created the design and etched it on commercial bronze,

* Miss Vevia Blair (deceased) conceived of the sundial unit as the climax of a course in senior high school plane geometry. It was first carried out under her inspiration and direction by Frances Mack Lewis in 1932-1933, and repeated by Mrs. Lewis during two succeeding years. Instructors in mathematics and others who may be interested in a detailed discussion of the mathematics involved are referred to "The Mathematics of the Sundial," to appear in *The Mathematics Teacher*, October 1936.

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it is also the product of the time and thought she spent in calculating the hour angles and angle of the gnomon, by means of mathematics learned during the study of this unit and based on mathematics of the earlier high school course.

Many teachers of secondary school mathematics attempt in some degree to lead their students to a comprehension of the fact that mathematics permeates life and the world about them. Their students learn that trigonometry is a tool of surveying and of navigation, and that algebra is a tool of physics. Geometry, except the part usually taught in the junior high school and called "intuitive," has not commonly been related in the mathematics classroom to any science other than mathematics. With its allied branch, trigonometry, however, it is closely connected with geography and astronomy. This unit attempts to present certain aspects of the four subjects in one of their many relationships, that is, their relationship to the construction, setting, and reading of a sundial.

The making of the sundial in this way is a centralizing purpose through which certain aims are accomplished both in general education and in the fields of mathematics, science, and art. For example, the general purpose or aim in such a unit might be defined as the creative expression of mathematical and scientific knowledge through the medium of an art. Some of the more specific aims in relation to these fields are listed below.

Mathematical and Scientific Objectives. (1) Proving geometric "originals" for a definite purpose. (2) Extending concepts of two-dimensional geometry to three-dimensional geometry. (3) Extending concepts of two-dimensional trigonometry to three-dimensional trigonometry. (4) Using knowledge gained in the study of algebra, geometry, and trigonometry. (5) Recognizing geometry as the tool of astronomy. (6) Learning, on a higher level, with the knowledge of the geometry of the circle and the sphere as a background, some fundamental facts of geography. (7) Acquiring familiarity with certain astronomical concepts. (8) Acquiring ability to read a sundial, making the proper corrections.

Art Objectives. (1) Acquiring skill in lettering. (2) Acquiring a knowledge of design appropriate for use on metal. (3) Learning the process of transferring design to metal. (4) Learning the process of etching.

In developing this unit, the mathematics and science aspects were so closely related that they were taught in the mathematics classroom by the mathematics teacher. During the first month of the unit the knowledge of the students was built up to the point at which they were able to make their designs understandingly and begin actual work on the sundial. The remaining two months were spent in constructing the sundial, and in continuation of the study and development of further related work in mathematics and science. Lettering and the elements of appropriate design were taught in the mathematics classroom by the teacher of fine arts; the painting, etching, and cutting out of the metal were done in the workshop under the supervision of the teacher of industrial arts. Each design was checked by the fine arts teacher for artistic merit, by the mathematics teacher for accuracy of the angles, and by the industrial arts teacher for practicability. Each dial was completed in school, but the setting of it was a summer project for the individual, which once again called for taste and mathematical precision.

In order to make clear the way in which mathematics functioned in this unit, it is necessary to present the mathematical background of the students before they studied the sundial. In the year 1932-1933 the sundial unit was begun in both the Fourth Year (tenth grade) and the Fifth Year (eleventh grade). In the former class it was discontinued after a few days' trial, because the class had not at that time a knowledge of geometry beyond the junior high school level. The following year, however, after completing the usual course in plane geometry, at the end of the first five months of the school year the class began the sundial unit again, and carried it to a successful conclusion with much enjoyment of the mathematics, the science, and the construction work involved.

This inability to master the fundamentals of the sundial in the earlier year may have been due in part to insufficient knowledge of geometry and in part to immaturity and lack of experience in both inductive and deductive reasoning. Successful work in this unit seems to require of the student, as a foundation, a knowledge of: (1) in plane geometry, the concept of the triangle, parallel lines, the circle, similar triangles, and symmetry; (2) in solid geometry, concepts of the ordinary solids; (3) in algebra, the equation, the formula, logarithms (valuable but not necessary); (4) in trigonometry, the meaning of sine, cosine, and

tangent, and the ability to interpolate in tables, and to make simple applications.

When this subject matter background was acquired, the class, during the course of the sundial unit, made further applications of plane geometry, and did more advanced work in solid geometry and in the trigonometry of the right spherical triangle. In solid geometry no formal proofs were required, but the student was expected to examine each statement experimentally and to decide whether or not she accepted its truth. The emphasis was put on the relation of the lines and planes in space, and on angles and triangles on a sphere. Similarities and dissimilarities between figures in space or on a sphere and corresponding plane figures were discussed. Throughout the study of the facts of solid geometry the attempt was made to acquaint the student with space, and to familiarize her with the various planes and circles of reference of the celestial sphere. The solid geometry included only those parts needed for the solution of the right spherical triangle. The formulas for the sine, cosine, and tangent of the angles of the right spherical triangle in terms of the sides were developed in the mathematics class, and the results obtained were compared with the corresponding functions of the plane right triangle. The use of these formulas in geodetic surveying and in astronomy was indicated.

Each of these branches of mathematics had its own relation to the sundial, as follows: (1) Determining the meridian plane at the close of an experiment required a geometric proof and construction. (2) Proving that the angle of elevation of the North Pole Star is equal to the latitude of the observer was an original in plane geometry. (3) Proving that the angle of the gnomon is also equal to the latitude of the observer included the use of spherical trigonometry and solid and plane geometry. (4) Determining the hour angles of the dial called for solution of the right spherical triangles on the celestial sphere. In addition, the class discussed the revolution and rotation of the earth and the positions of its axis. Knowledge of latitude and longitude was put on a firmer basis in the light of familiarity with solids, particularly spheres.

Since the sundial is a time-telling device, any consideration of it naturally leads to a discussion of time and its measurement, which is essentially an astronomical problem. The different kinds of time—sidereal, apparent, mean, and standard—used by the astronomer, the

navigator, or the layman were examined and relationships among them were studied. Opportunely, the radio contributed to interest in this unit by presenting short talks on time and its measurement, and one on sundial mottoes. A report on the measurement and division of time through the ages or on the development of clocks was written by each student. One class made a trip to the Museum of Science and Industry, where a special exhibit of time-telling devices was being held. The American Museum of Natural History has a permanent exhibit of sundials and astrolabes, which students visited at their convenience.

This unit offered opportunities for creative and individual work of various kinds. Although the making of a sundial was not required, four-fifths of the students taking the course have made them. The fundamental mathematics of the unit has been a class requirement, but those students who did not wish to make sundials have worked in related fields, while their classmates were designing, painting, and etching their dials. For example, one girl read and reported on Menzel's *Stars and Planets*.[1] Another read selected chapters from Russell, Dugan, and Stewart, *Astronomy,* Book I,[2] and made several solid models and charts for the unit. A third wrote a paper on the history of the sundial. A group of three girls elected to study traditional demonstrative solid geometry.

Each girl who made a sundial had her individual problem to solve. She had first to decide where her dial was to be located, and look up the latitude; for the angle at the base of the gnomon must equal the latitude of that place, and the hour lines also depend on the latitude. The calculation of the angles represented the main problem of the unit. The latitudes used varied from 34° N. to 44° N.

The design and motto selected for each dial were matters for individual choice. The designs were built up on triangular, square, hexagonal, octagonal, or circular backgrounds of metal. In some cases the body of the design was geometric; in others, pictorial. The mottoes were Latin, Italian, German, French, English, or Scotch dialect quotations, and their tenor varied from that of "I only mark the hours that shine" to *Sans le soleil je meurs.* Among them were:

Docet umbra (The shadows teach).
E sempre l'ora (It is always time).

[1] Menzel, Donald Howard. *Stars and Planets.* The University Society, Inc., New York, 1931.
[2] Russell, Henry Norris, Dugan, Raymond Smith, and Stewart, John Quincy. *Astronomy,* Book I. Ginn and Company, Boston, 1926, 1927.

Ich dien (I serve).
Caelitus mihi vires (My strength is from heaven).
Le jour viendra (The day will come).
Nae man can tether time nor tide.
Ne cede malis (Do not give way to misfortune).
Morgenstunde hat gold im Munde (The morning hour brings golden dower).
Tempus omnia sanat (Time heals all things).
Occurrent nubes (Clouds will intervene).
Esto perpetua (May it last forever).
Labuntur et imputantur (They [the hours] slip away and are laid to our account).
Ohne Hast, aber ohne Rast (Unhasting but unresting).
Sine sole sileo (Without the sun I am silent).

At the end of the school year the dial was finished, but the problem could be completed only by its permanent setting in the location for which it had been originally designed. The methods of setting sundials had been discussed in class and from this discussion specific directions for setting the dial had been developed. Each girl was given a copy of these directions, which included four methods: use of a compass, use of an almanac, observation of stars, and determining the meridian plane experimentally. For two years no report of this last phase of the work was made until the opening of school in the fall, but the third year a questionnaire was sent during the summer to each girl who had made a sundial, asking her to give the state, town, latitude, and longitude where her sundial was located and whether it was in a garden, on a roof, etc., and if it was set and working satisfactorily. She was invited to make comments and, if possible, to enclose a snapshot of the dial in position.

The members of the class reported their sundials as permanently set and functioning satisfactorily at the following locations: Yarmouth, N. S., Portland, Me., Newbury, N. H., New Canaan, Conn., Peekskill, N. Y., New York, N. Y. (penthouse garden), New York, N. Y. (backyard), Seabright, N. J., New Hope, Pa., Los Angeles, Calif.

Some of the comments written by the girls on the returned questionnaire may be of interest:

"The brown that comes from the weather is covering the design. What can be done about that, please?

"It is grand to have the sundial to prove to oneself what one can accomplish, and also it is decorative on the terrace and useful too. I find the most enjoyment

in it probably because of the work I put into it, although Mother, to whom I gave it, likes it also."

"Making the sundial, finding a suitable location for it, and making its base have all been, I think, as enjoyable to the whole family as they have been to myself. There is so much satisfaction in having created something that will last. Besides that, the work opened up an entirely new sphere of interest, in the heavens—that is, astronomy and telling time by the stars. The only trouble I had was in setting it; we couldn't agree about the N.S. (North Star), but I have done it now in another way."

"We took an ordinary log and covered it with cement around the sides and on top. We intend to cover the cement with a white cement paint, to harmonize with the surroundings. Everyone seems to like it, and it works!"

For three years this unit has meant delightful and satisfying weeks of work for three successive groups of able girls whose interest in mathematics and science is cultural rather than occupational, and who have had the good fortune to spend their summers in such different localities that each had the thrill of solving a unique problem and setting up a working sundial at a particular latitude.

The unit was satisfying from the standpoint of both teacher and pupil because it gave opportunities for: (1) The unifying of the several branches of elementary mathematics and the extension of the concepts of plane geometry and trigonometry to the three-dimensional field. (2) The co-ordination of work in several fields: mathematics, geography, astronomy, chemistry (of etching), history (of the measurement of time), and fine and industrial arts. (3) The experience of seeing a long period of study and work culminate in a personal and concrete product. (4) The creation of a unique object of beauty and permanence which will be a continued source of pleasure and satisfaction to its owner.

Parts of this unit may be adapted to any geometry course and to various types of pupils without regard to sex or special interest. The complete unit may be satisfactorily carried on with a group of intelligent pupils in a school in which the co-operation of the departments of science and the arts can be secured. However, it is necessary that the mathematics department in the school shall strongly desire to develop a course in which the various branches of elementary mathematics are truly integrated, and that the teachers in the co-operating departments shall be enthusiastic advocates of the co-ordination of subjects in situations in which such co-ordination has real value.

American Education in 1960

By DAVID SNEDDEN

Professor Emeritus of Education, Teachers College

THE purpose of this article is to describe certain improvements in American education which the writer believes to be both desirable and practicable. If our people continue to progress for the next twenty-five years as they have for the last century, and if the various systems of American education should during that period advance as much in scientific clearness of their purposes as they have during the last half-century advanced in their scopes and enthusiasms—then the improvements here predicted should have been largely accomplished by 1960.

PRELIMINARY

Serious confusion prevails today in certain great areas of American education.

Many well-informed men and women believe that much of the time, effort, and money now being expended in these areas are not productive of the kinds of cultures, co-operative behaviors, and economic efficiencies so extensively wished for by patriotic Americans. But proposed new plans calculated to improve conditions usually meet with strenuous opposition. Hence the great confusions and play of cross-purposes which are especially found among our educational leaders—that is, our professors of education, our subject matter specialists in colleges, our mature teachers, and our educational administrators.

These confusions are especially manifest in the following large divisions of the American system: the junior high school curricula; the curricula of senior high schools as these should be adapted to the learning abilities of youths from 14 to 18 years of age who are below the median of natural intellectual abilities; the courses of *liberal* as distinct from vocational (professional) education in colleges; the provision of really effective vocational educations for many

hundreds of vocations other than the professions; the provision of really effective kinds and amounts of instruction and training for political citizenship, especially in its more kinetic or co-operative governing aspects; and the provision of really functional cultural educations adapted to our democratic civilization.

In all the above areas the matters chiefly in dispute are aims, objectives or purposes. Especially acute are divisions of opinion as to whether the traditional *subjects of study* of secondary schools and nonvocational colleges are producing, or can be made to produce, the valuable learnings desired.

In other areas of present-day education leaders may differ widely as to *best methods*, but they are more nearly in agreement as to objectives or purposes. That seems to be true in such areas as the curriculum of six-grade elementary education, the content of physical welfare education, and the courses of professional colleges. And there are certain other areas where considerable complacency still prevails, but where grave doubts may well be held as to whether present ideals and practices are not seriously wasteful if not actually harmful. These include especially all prevailing systems for the school educations of children from two to six years of age, and nearly all types of supposedly cultural educations for the less able-minded.

Because the present writer has well-defined convictions as to the improvements which should and will be made during the next generation in the above areas of education, he has adopted the device of picturing at the outset some of the contrasts which he believes would prove most striking if we could compare American education of today with that expected to be realized by 1960.

EXPECTED CHANGES BY 1960

If an American educator of today were suddenly transported to 1960 and given an opportunity to survey the schools of such a state, for example, as Massachusetts, it is predicted that he would be especially impressed by the following changes.

1. All the children of all the people will in 1960 be attending full-time schools of *general* education to eighteen years of age.

2. Half the children of all the people will also be continuing their *general* education to the age of twenty, and the majority of these to twenty-two years of age in junior and senior liberal colleges.

3. All the children of all the people will, after completing their general *educations* at eighteen or twenty or more years of age, be expected and required to enter specialized full-time schools of *vocational* education.

4. All children from twelve to fifteen years of age will be attending junior high schools irrespective of grades reached in elementary schools.

5. All children from fifteen to eighteen years of age will be attending senior high schools irrespective of previous grades reached.

6. In both junior and senior high schools curricula will be more flexible than at present, with various courses especially designed for the exceptionally able-minded or able-bodied, as well as others especially adapted to the exceptionally backward-minded or weak-bodied.

7. All persons having requisite interests and abilities profitably to continue one or more lines of *general* education beyond attainments at eighteen years of age will be admitted to junior liberal colleges.

8. But in none of the foregoing types of schools—junior high schools, senior high schools, or liberal colleges—will any vocational courses be offered. Neither will any pre-vocational courses be offered—that is, courses specially designed to prepare for entrance to vocational schools.

9. Every standardized and approved vocation, no matter how specialized, will have at least one vocational school in each state where that vocation is extensively followed.

10. Only persons well qualified by natural abilities to enter any particular vocation will be admitted to a vocational school preparatory to entering that vocation.

11. More than half of all vocational schools will not receive students under twenty years of age. None will receive students under eighteen years of age. And for many promotional and managerial vocations minimum ages of twenty-five to thirty will be required for admission.

12. In the organization and classroom handling of school subjects of old or new kinds sharp discriminations of purpose and method will generally be consciously made, according as the anticipated learnings are expected to be:

(a) Primarily of *appreciational* or primarily of *performance-power* functionings.
(b) Primarily of *present* and *proximate* or primarily of *deferred* optimum functionings, and
(c) Such that the best methods consciously to be employed by teachers and pupils toward their acquisition shall be primarily of the *play* order or primarily of the *work* order of learning activities.

13. Each school subject in the schools of 1960 will be taught primarily with the purpose of realizing *one* class and one class *only,* of learnings—that is, a class of learnings of fairly homogeneous characteristics as regards expected functionings. For example, elementary school arithmetic, described as consumers' arithmetic, will be taught primarily toward producing superior powers of buying, investing, and reading in areas of *euthenic cultures.* Trigonometry will be taught primarily as a *vocation* subject in the comparatively few schools designed to train for engineering and other vocations which extensively use trigonometric calculations. All histories, except recent American history and a very few sections of old American history, will be taught primarily to produce broad ranges of *cultural appreciations* to which will be added a very few strands of exact-performance-power knowledge for purposes of integrating wide ranges of appreciations.

14. In many cases those bodies of separate knowledge or skills which we now call subjects—for example, chemistry, American history, high school mathematics, music, physical training, written composition, and others—will be reorganized into two or more very unlike subjects in order that each of the newly designated subjects can be made genuinely functional toward producing learnings in some one area of proven values.

In some respects the foregoing predicted changes represent what most of us would expect as natural evolutions. But in other respects they clearly represent radical departures from the theories of educational values held by large proportions of American educators and perhaps even larger proportions of well-informed laymen.

In order, then, to justify these forecasts the writer will be expected to present the grounds upon which he believes the suggested changes

to be both desirable and practicable. But because these forecasts, as well as some of the allegations made at the outset, seem to imply serious criticisms of America's vast systems of education now in operation, it is necessary that these, too, be analyzed.

THE VAST ACCOMPLISHMENTS OF AMERICAN EDUCATION ON FAITH-SUPPORTED FOUNDATIONS

I need not remind you that the American system of education has grown into an enormously large, a highly complex, and a hugely expensive set of institutions. Our professional teachers and other educators now number more than a million. On the operations of our schools and colleges we expend some three billions of dollars annually. Another billion is usually spent each year in adding to or replacing buildings and equipment.

No less striking are the increases in numbers of learners reached. For a generation at least rates of high school and college attendance have multiplied nearly three times as fast as the rate of population growth. Years of compulsory schooling have also been steadily raised and nearly all public schools are now in session for from thirty-six to forty weeks per year instead of the short terms of a generation ago.

Furthermore, we are almost yearly adding new kinds of schools and courses to our already complicated systems. We now hear much about possible expansions of adult education. Thirty years ago Massachusetts took the lead in plans to add to existing systems of secondary schools others designed to provide definite vocational training for the manual vocations. And now enthusiastic advocates plead for extensions of nursery and other schools for the very young.

In certain respects these educational systems of America are at the present time among the greatest and noblest of the achievements of our people. We may be disappointed because in some respects these systems seem to have failed sadly to produce expected results. But similar comments could be applied no less to many other American institutions. We have many reasons to be proud, and some to be ashamed, of our political governments, our enormous accumulations of wealth, our exploitations of natural resources, our democratic cultures, our administration of justice, and the personal moralities of our peoples.

Into the building and operation of our tens of thousands of schools we have poured not only our public and private wealth, but also our faiths and hopes—just as we have done in the building and operation of our systems of government, of manufacture, of agriculture, of banking, of policing, and of general culture. When visitors from abroad measure the *magnitudes* of the works of our present-day national, state, and urban legislatures, the gigantic operations and outputs of our farms and factories and railways, and the lavish outpourings of our publishing, photographing, and broadcasting enterprises they wonder and admire. But when they inquire a little more deeply into the actual effects of all these huge achievements on the personal characters and cultures, the prevailing securities and well-being of the multitude of our peoples, they are bewildered and troubled by what they find.

And so it is with our huge systems of schools and colleges. In costliness of buildings and equipment, in the prolonged full-time attendance of multitudes of learners well into the late years of adolescence, and in the enterprise and devotion of our million of professional educators, these institutions are nowhere equaled in the rest of the world. But when we look at the visible effects of these vast quantities of schooling on the American people we experience some keen disappointments. Neither our practices of public and private morality, our prevailing intellectual and other cultural interests, our ideals and standards of workmanship, nor our social co-operations seem to have advanced in any proportion to our educational efforts.

But patriotic and far-sighted Americans are not to be dismayed by some of the many shortcomings of our institutions. It is now easy to understand why this country's amazing progress, especially during the last hundred years, has many mixed and unpleasant consequences. Our economic, political, cultural, and even religious evolutions have been of a rapid and almost wholesale order—in massive and even tempestuous movements. We have been developing a raw continent, assimilating heterogeneous immigrant populations, and putting into operation the thousands of kinds of power-driven mechanisms given us by science, invention, and lavish stores of capital wealth. Like the frontiersmen and adolescents and the newly rich of all times we have been lavish of optimistic plans and enterprises but we have shown little interest in the remoter social consequences of these

dynamic enterprises. That more refined and detailed work has been left to the successors of our pioneers.

The actual values of most forms of school and college educations as now given cannot yet be scientifically measured by any devices yet available. Even the estimates which well-informed and careful men make are often so crude and biased that very few trustworthy consensus judgments are yet available. What custom, tradition, and partisan promotion finally produce as established forms and standards of school-administered learnings now rest largely on *faith-valuations*. But similar faith-valuations, it is well known, underlay nearly all the practices of medical theory and art in the Western World only a very few generations ago—as they still do largely in the Orient. And, of course, large proportions of the valuations still basic to our political wishes and practices likewise rest almost exclusively on emotionalized faith foundations.

TOWARD MORE SCIENTIFIC THINKING AND PLANNING

The ablest of educators are now joining the ranks of those psychologists and social scientists who believe that the time is now ripe to develop foundations for political, economic, and educational thinking and practice no less scientific than have been those developed in medicine, agriculture, and all fields of mechanical technology during the last hundred years.

These men and women hope and believe that out of the trials and even tragedies of the recent years of war and economic depression a variety of new and better conditions can be made to emerge. We have heard much about the needs for an idealized program of large-scale and widely socialized economic planning. In hundreds of ways we have been experimenting to discover and put into operation improvements in our political systems and in the democratic citizenship which must sustain them. And though in certain other areas of American life—family morality, the personal cultures of our peoples, and the eugenic improvement of our human stocks, for example—where large-scale improvements are urgently needed, we may seem to have been less interested, it is probably true that far-sighted social scientists, religious leaders, and special organizations have been laying foundations for needed reforms and improvements in these respects also.

Of all these plannings and movements the more progressive educators of our country are becoming increasingly aware. They, too, are gradually evolving long-range plans and far-reaching programs of reconstruction and improvement. They realize that notwithstanding the great progress made by our schools and colleges in recent years the educational offerings provided by them are as yet contributing effectively in only a few directions to the building of fine and wholesome societies. And especially do these progressive educators have great confidence in the almost limitless possibilities of finding scientific foundations for the improved systems of education which even within the next two or three decades we may be able to develop. Of course all these aspirations for and anticipation of better things have produced much unsettlement of minds and emotions everywhere. Naturally, our times are fertile not only of some serious constructive thinking but of numberless utopian proposals and movements as well. There are some who talk vaguely about a "new social order," about fundamental reconstructions of our economic and political systems. And there are even prominent educators who seem almost to have become hypnotized by the possibilities of having the public schools of the land supersede our political, our religious, our family, and our neighborhood associations in molding the better social institutions of the future. These educators, like the thousands of other highly emotionalized advocates of economic, political, and other social panaceas have little patience with seemingly slow processes of evolution, the confused operations of democracy, or the orderly procedures of law and science.

But under present-day American conditions all these visionaries and well-meaning utopians, whether in politics and economics or in education and social work, constitute only noisy minorities. The great majority of mature and hard-working American men and women—the people who in the final analysis must be expected to approve and support programs of social as well as educational improvement—are practical, clear-headed, and sanely altruistic. They may toy for a time with illusory schemes and great expectations; but presently they again plant their feet firmly on solid foundations of common sense, everyday reality, and the proven findings of science.

Nevertheless, we all know that social changes have been and still are taking place. Perhaps none of these has been so revolutionary

as the extremists contend. But which have been sufficiently momentous to profoundly affect educational policies for the future? This is an important question.

WHAT RECENT OR PENDING SOCIAL CHANGES ARE LIKELY TO HAVE PROFOUND EFFECTS ON EDUCATION DURING THE NEXT GENERATION?

The present-day vast and complex systems of American education have not grown in the air. They have had their roots in the deep growth processes of our peoples' characters and institutions. In the estimation of most social scientists, most of the conditions basic to these growth processes have not changed drastically in recent years and they think it unlikely that they will change in revolutionary degrees in the near future. But in one respect certain social changes are taking place which will very seriously affect for better or worse the future progress of American institutions, and especially those of an educational nature. That change is in our rate of population growth.

No longer shall we have a rapidly expanding people. Except in a few areas the prevailing sizes of American families are rapidly growing smaller. Social scientists predict that within a very few years, because of doors closed to immigration and because of our diminishing birth rates, the American population will become nearly stationary, in spite of the greater longevity of adults and the lessened mortality rates of young children.

The greatly lessened fecundity of the American people now seems likely to lead to at least one tragic consequence. Sociologists find much evidence that those family stocks among us which seem to inherit and transmit low levels of mental ability are still increasing rapidly whereas other family stocks of naturally superior ability are not even reproducing their own numbers.

If these conditions of socially unwholesome or dysgenic fecundity should continue for a few generations, then, of course, our educational institutions would have far fewer young persons of superior mental powers from whom to expect leaders, original thinkers, inventors, and examplars of high cultures. Various kinds of vulgarization of culture, civic incompetency, and unemployableness would become even more widespread than at present.

Another portentous consequence of our success in conserving the healths of our people will probably be steady increases in the proportions of helpless aged persons in our population. Even now tragically large numbers of these aged persons are incapable of self-support, and must become dependent upon either relatives or public funds for food, shelter, and comforts. If the proportions of these dependents should steadily increase, then the time must come when very large amounts of the earned resources of our societies will have to be set apart for their support.

But the present writer believes that just because the abler minds among us are becoming increasingly able to diagnose the possible evils of certain current population changes, we shall presently find ourselves ready to take steps for their prevention.

For one thing, we educators may be sure that as families become smaller and standards of cultured living rise, steadily increasing proportions of parents will demand more and better school educations for their children. Under the influences of such better educations we could and should not only increase the economic productiveness of all forms of work, but also develop agencies and moral ideals under the influences of which those stocks among us of inferior powers will choose or will be compelled to refrain from marriage until they show evidences of being able to support themselves and their children up to those American standards of self-sufficiency which for several generations have been the pride of our stronger and more self-respecting folk.

As respects nearly all other types of social changes of which our social scientists are aware, the present writer believes that optimistic outlooks are justified for Americans. It seems improbable that our country will become seriously entangled in foreign wars during the next few decades. Our people no longer entertain even the faintest of imperialistic ambitions. Perhaps our economic exchanges with other peoples will continue to diminish as have already our financial exchanges, our foreign missionary enterprises, and our political influences. On the other hand, through travel, broadcasting, and reading our purely cultural relations to all other peoples will probably grow more and more fruitful. Some forms of political and economic isolation may prove beneficial for us as well as for others, whereas increased cultural intercourse may work toward good will and peace.

In any event it is certain that the English-speaking peoples of the United States and Canada must be increasingly responsible for their combined welfares and destinies. We may help other peoples at a distance but we shall probably prove less rather than more dependent upon help from them. The noted French traveller, André Siegfried, viewing this country a few years ago, published his impressions in a book entitled *America Comes of Age*. In all likelihood we shall more and more come to see the true implications of that title. And it will be on foundations of the resulting matured insights given by the social sciences and reinforced by the psychological sciences that the more scientific and efficient educations of the next generation will be evolved.

TOWARD SCIENTIFIC PROCESSES IN EDUCATION

In the opening paragraphs of this article a variety of fairly conspicuous *changes* from present practices were predicted for American schools in 1960.

But those forecasts were only intended to serve as illustrations of the more efficient educational practices which are expected to follow from the application of scientific methods to the determination of the more valuable learnings which schools and teachers should promote. Along what lines may we effect such scientific methods, insofar as they affect the *purposes* (but *not* the *methods*) of efficient educations to develop? The following are believed essential foundations.

Schools, we know, are agencies evolved by advanced societies to promote certain kinds of supposedly valuable learnings—*and certain kinds only*. Teachers and other educators are specialists appointed to serve their societies by inducing and facilitating the acquisition of certain supposedly profitable learnings by young or mature persons. We have seen that in modern civilized societies schools and teaching forces tend to become enormously complex and expensive institutions. But like all other faith-based complex human agencies, modern schools tend to accumulate over-loads of antiquated customs and outworn creeds. They tend to develop strongly vested interests and bureaucratic personnels. If they are not to become intolerably inflexible, oppressive, and expensive institutions, their purposes, processes, and effects must somehow be lifted from the murky jungles of belief and tradition into the clear airs of scientific description and

evaluation. Modern schools, let us repeat, are urgently in need of *sciences of educational values* to parallel our already moderately well-developed sciences of therapeutic, dietetic, and other values. The foregoing statements express what are only truisms to social scientists.

We have said that America now expends literally enormous sums of money on its systems of schools. Of its eighty million workers, more than a million specialize exclusively in the educational vocations. Nearly all our youths from six to eighteen years of age devote their working hours almost wholly to the acquisition of the kinds of learnings promoted by schools. And millions more give all or much of their working energies throughout early adult years to the further acquisition of learnings as these are organized and purveyed by specialized schools.

But in what measure are the learnings thus so lavishly fostered *really valuable learnings*? This query raises many questionings, not only among our more critical parents, citizens, and educators, but even more among those of our social scientists who specialize in study of those tendencies and conditions in the hundreds of kinds of contemporary societies which make for or against social strength and wholesomeness.

Sociologists and other classes of well-informed laymen who are in some measure keen observers of the healthfulness of present-day societies are very doubtful, as earlier suggested, of the values of whole areas of our school-promoted learnings. Do our wonderfully expanded high school systems, for example, contribute in any substantial degree to elevate public morality or honor, to make us a more cultured people, or to lay secure foundations for more effective political co-operations? What are the actual large-scale values arising from our expensive and strenuous school promotions of learnings of mathematics, foreign languages, physical sports, histories, and music? Are our general or specialized schools assuring effective learnings of vocations, except at the level of the professions? These are but samples of the hundreds of doubt-provoking queries which ceaselessly invade the thoughts of the more realistic of American thinkers everywhere today.

It is to the scientist and philosopher Herbert Spencer that we owe the beginnings of realistic inquiries into the values of learnings.

His keynote query "What knowledge is of *most* worth?" uttered nearly a century ago, must still be the starting point in any quest after fuller understanding of educational values. It is, of course, easy to subject that general inquiry to a score of dissecting processes in view of the enormous ranges of reliable psychological and sociological knowledge which have been amassed on the deep foundations laid by Spencer and a scant dozen of his contemporaries. Not only "what knowledge," but what habits and skills, what attitudes and ideals, what appreciations and willed purposes, as these can be learned through schools and other agencies, are of *most* worth? Again, out of the vast accumulations of conceivably valuable learnings which present-day cultures make possible, which are likely to be of *most value* to dull learners as contrasted with bright learners? Which should be distributed as widely as practicable, and which made available chiefly to a few promising specialists? Again, which learnings, acquired by individual persons, have valuable effects chiefly for these learners in very *personal* ways, and which give values through such learners largely to their *societies*—that is, to their families and their states and to the multitude of other large and small co-operating groups through which only can civilized peoples find effective fulfillment.

But back of all these questionings lie problems of *functioning*, to some of which Herbert Spencer devoted much of his famous essay on "Education." When we ask after the values of learnings, critical thinkers must at once raise the further question "Valuable for what?" Learning of algebra may have high *vocational* values for prospective engineers but none for the rest of us, just as quinine may have high *therapeutic* value for persons infected by germs of malaria but none for the rest of us.

It is, then, obviously possible scientifically to evaluate potential *learnings*, as it is possible scientifically to evaluate particular articles of diet or particular drugs or particular tools, only by reference to their *expected uses or functionings somewhere in the wide ranges of human well-being*. Physiological science now explains for all the functionings in the economy of the human body of thyroid gland or of vermiform appendix; of sugar or of cellulose taken as articles of diet; and of certain calcium or iron compounds taken for therapeutic purposes. Similarly, sociological science must yet prove the functionings and

values of learnings of Spanish or the reading of musical notation, of skills of climbing or habits of typing, of attitudes of loyalty toward governments or fears of soil erosion.

Perhaps analogies drawn from the highly artificialized conditions of modern economic production may prove even more suggestive. What valuable functions are served in the automobile by electric storage batteries—and for what functions would such batteries be entirely useless? What rôles or functions are served in present-day business by bills of exchange and under what conditions do such instruments prove functionless? A modern city is a complex organization, not very different, in ultimate analysis, perhaps, from such an organism as the human body. As such, its total healthful functioning for its thousands of members becomes crucially dependent on the effective functioning of scores of *organs*—transport systems, telephone systems, water-supply systems, property-safeguarding systems. Let disaster overtake the operation of any one of these urban mechanisms, and catastrophe may threaten the whole, just as a disaster to the eyes, heart, or brain of a human body may paralyze the functionings of the entire organism. In the old fable the philosopher told the boatman that one quarter of his life had been lost because he had not studied philosophy. But when the boat struck a snag the boatman could confidently tell his philosopher passenger that the whole of his life was likely to be lost because he had never learned to swim.

All well-informed persons are aware that various types of scientific study, as well as technological discovery, have in recent centuries enormously extended man's comprehensions and controls of large proportions of the organs and processes which make for healthfulness in human, animal, and plant bodies. And the material factors and the conditions of their functioning which make for soil fertility or high tensile strength in steel or conservation of fisheries or vermin-resisting qualities in buildings are likewise becoming scientifically understood and controlled at rates which no one mind can follow. In the far more complex areas of mental and social phenomena, too, a great number of promising beginnings have been made toward scientific understanding of the functional processes through which our hundreds of small and large societies are now made to serve men, women, and children.

Guided by such achievements already won in fields of human work which are less complex than those of the growths of human beings from infancy to fully-functioning maturity, progressive educators are now obligated to embark upon systematic studies of the processes and conditions of the *effective functionings* of *all learnings*, and especially of those *learnings* which it should be the missions of professional teachers and their schools to promote. We are well aware, of course, that for thousands of years men have with considerable success devised schemes of supposedly valuable learnings for themselves and their dependents based on everyday practical arts and simple empirical philosophizings. We know also that from ancient times even into our own day, extraordinarily imaginative men have philosophized in large ways about educational values. But never before our own day have either incentives or techniques for *scientific approaches* to problems of the values of learnings been in any degree available.

THE SEVERAL "CAREERS" OF MEN AS SOURCES OF SCIENTIFIC VALUATIONS OF LEARNINGS

The first stages in the scientific study of any of the complex situations which confront the minds of men are those of dissection or analysis. Let us begin our present enterprise of studying possible *values* of learnings with some realistic analyses of the actual functionings of learnings.

It is obvious to common experience that there are many types of learnings which are primarily of value to learners for *vocational* purposes and hardly at all for other purposes. The skills learned by the barber, the mathematical knowledge acquired by an engineer, and the masteries of French achieved by a professional teacher of that language become the *means* by which those workers serve their fellows and so earn their own livelihoods.

Next let us remember that there are other kinds of learnings which seem to be sought simply for the immediate satisfactions which they give, and which do not appear to function as *means* to any further valued ends whatsoever. Perhaps large proportions of the learnings acquired by children in spontaneous efforts to satisfy their instinctive curiosities and imitative impulses are of this order. But all of us adults possess also many similar play-like interests or curiosi-

ties in strange events, in unusual persons, in districts, in novel books, and in the aesthetic arts. These interests lead us into the acquisition of new learnings which may have no strict utilitarian values, but which are sources of personal *cultural* satisfactions.

For the present purpose it seems most practicable and useful to subdivide all the usual activities of well-civilized adults into seven great groups or strands. And for brevity and emphasis let us speak of these seven classes of activities as "the seven careers of men."

The seven "careers" here distinguished will be called the vocational, the family-rearing, the religious, the health-conserving, the civistic, the culture-enhancing, and the pleasure-finding. Very possibly other analysts of the social practices of large numbers of civilized peoples may find somewhat different kinds or numbers of groupings more serviceable. But it seems certain that only on some such foundations can anything resembling scientific approaches to effective determination of the optimum kinds and amounts of learnings which schools should impart be worked out.

Shakespeare, it will be remembered, speaks of the "seven ages" of man. But we, looking into the lives of ourselves and our neighbors, can also distinguish these seven more or less differentiated "careers" through which we build our practical and spiritual achievements toward the larger ends of manhood and womanhood. Then, while always remembering that we are still largely dependent upon analogies and figurative language for our descriptions, we shall endeavor to find the kinds and of each kind, the quantities of learnings which will most usefully function in the vocational, the family-rearing, the religious, the health-conserving, the civistic, the cultural, and the pleasure-questing careers which, as men and women, our children will probably follow.

The great majority of normal adult human beings more or less consciously function along these seven great channels of activity. But there are, of course, some minorities in every society who for good or bad reasons prefer or are forced to confine their work, their play, and their other living to a few rather than all of these careers. There are men and women who rear no families. We have always with us some persons who pursue no useful vocations. Even in our democratic commonwealths there are fully-grown adults who refuse, so far as they can, to share in the co-operations of political member-

ship. Likewise there are in all societies persons who take no interest in religious co-operation. And it is sad but true that while perhaps no sane person ordinarily refuses to interest himself somewhat in the conservation of his personal health or the enhancement of his personal culture or participation in some of the wholesome pleasures of life, nevertheless there are always to be found large classes of men and women who profess not only no considerable interest in such concerns but who even decry in themselves and others any conscious efforts to reach higher standards than those which the natural instincts and old customs have given us.

But all these are exceptions rather than the rule in civilized societies. The great majority of men and women in such societies strive to live normally balanced lives, just as hygienically well-cultured persons strive to sustain themselves and their dependents by well-balanced diets. "Man shall not live by bread alone." "For what is a man profited, if he shall gain the whole world, and lose his own soul?" A hundred adages like these express the intimations which men felt even scores of centuries ago that too exclusive preoccupation with any one or a few of the channels of the normal functionings of man's activities could be a dangerous thing.

Nevertheless, we moderns are sadly aware that all of us experience frequent and intense temptations to specialize our pursuits along some of these lines to the neglect of others. Everywhere are to be seen those who so devote themselves to the pursuits of pleasures that they are presently overtaken by disaster in their vocations and perhaps in their health. Many men and women with the best of intentions bury themselves so deeply in vocational pursuits that in a few years they become unable to interest themselves in family rearing, the elevation of their personal culture, or even the conservation of their health and the pursuit of wholesome forms of pleasure-giving recreation. And we well know that there are many conditions under which even the best of us yield to temptations to give only nominal attention to our religious and our civistic obligations.

FUTURE PROSPECTS

Throughout the United States there are now literally hundreds of centers in which the beginnings of genuine research in education are being undertaken. Much of this research now explores chiefly the

psychological foundations of education. But some of it is turning toward the *sociological* foundations, where heretofore only vague and largely futile philosophizings have supplemented custom and practical arts processes of determining values and objectives for school courses and curricula.

Supporting these pioneering ventures in exploring possible scientific foundations for teaching methods and educational policy-making, are the wishes, the intellectual gropings, and the timid but persistent criticisms of tens of thousands of thoughtful teachers in their annual institutes, conventions, and summer schools. And back of all these are the vague but widespread approvals and disapprovals of almost millions of parents and other laymen whose faiths in the ultimate possibilities of right educations are still strong but whose dissatisfactions with particular present practices are frequently also intense.

Taken altogether the foregoing pressures upon educational thinkers and policy-makers seem certain to produce cumulative effects of gigantic proportions within the next few years.

The hypothetical forecasts presented in the early pages of this article have been based upon certain kinds of sociological explorations and analysis. These sociological studies provide what in brief seems to be convincing evidence that because of evolving conditions:

1. The provision of full-time, full-competency vocational training for all the sons and daughters of all the people is now an urgent necessity, but that because of the extreme mechanizations and specializations of nearly all forms of present-day economic production,

2. It is now impracticable that any really functional educations for vocational careers as now evolved should begin under eighteen to twenty years of age. Furthermore,

3. For the provision of really effective vocational education, only from one to a half-dozen specialized vocational schools for each distinctive vocation should be provided in even the more populous states—as is now the practice in providing training schools for the professional vocations. But such postponements of specialized vocational educations to mature years render it inevitable that

4. The ambitions of increasing proportions of, and eventually all, parents for better starts in life for their progressively smaller numbers of children, coupled with progressively clearer perceptions of the

needs of political and other large-scale societies, will force prolongation of the nonvocational educations of all young persons up to eighteen or even twenty or more years of age. But if those prolonged years of school attendance are to prove worth their cost,

5. The nonvocational educations of all persons from twelve to eighteen or twenty years of age must to far greater degrees than at present be consciously specialized for the different "career-objectives" and especially very soon for the political membership, the self-culturing, and the health-conserving careers. But as an essential condition,

6. There must be put into effect certain changes in the departmentalization (and preceding training) of junior and senior high school teachers whereby some will specialize only in training and instructing young persons for later political membership, while others will specialize only in laying the foundations for later self-culturing processes.

7. The probable effects of the above changes on programs of education for children under nine or ten years of age are not clear. Almost certainly one *general* effect will be to let young children, in the language of pathetic Paul Dombey, "remain children a little longer." That might easily lead to general practices on the part of parents with well-environed children of deferring for them any and all school attendance until nine or ten years of age.

New Studies in Education

A FACTORIAL ANALYSIS OF ABILITY IN FUNDAMENTAL MOTOR SKILLS*

NUMEROUS studies have been reported which have attempted to determine the degree of specificity of the abilities of man by means of the Spearman method employing the tetrad difference criterion. Few investigators have directed their attention, however, to the abilities involved in the activities of the physical education program. This monograph reports the results of such an analysis of the abilities of 2,094 college men with respect to chronological age, standing height, weight, vital capacity, running high jump, standing bar vault, rope climb, 176-yard run, and a baseball throw for accuracy.

FINDINGS

An analysis of each of the frequency distributions indicates that, for the most part, the criteria for the normal distribution are not satisfied. The scores in the bar vault approximate most nearly the Gaussian curve. An analysis of the thirty-six intercorrelations reveals positive (although consistently low) association of all the traits with the exception of three in which the variable of weight is involved. The correlation coefficients, corrected for age and for attenuation, are also presented. An observation of the plotted means and standard deviations of the arrays on the correlation charts indicates that the assumptions of rectilinearity, homoscedasticity, and homoclisy are not justified in many cases. An analysis of the 756 positive and negative tetrad differences reveals that more than 47 per cent of them are greater than four times their probable errors and that more than 40 per cent satisfy the rigid requirement of exceeding five times their probable errors. The correlation (average value) of each of the traits with any central factor which may exist is consistently low, the bar vault being more highly saturated with g than any other motor skill.

The evidence which is presented in this study does not reveal the presence of a central factor common to all the traits. This conclusion is supported by three of the findings: (1) the consistently low correlation between the several traits; (2) the value of the tetrad differences in relation to their probable errors; and (3) the consistently low correlation of each of the traits with any such central factor.

The conclusion which must be drawn from the evidence is that the ability

* By LLOYD M. JONES, Ph.D. Teachers College, Columbia Universty, Contributions to Education, No. 665.

represented in these tests in this population is not dependent upon a central factor common to all traits, plus specific factors in each of the individual traits; rather, one is forced to conclude that group factors or overlapping factors, common to two or more traits, are determiners of one's ability. This does not preclude the existence of certain "levels" of ability in which there may exist a general quality which may be called "all-round" ability, as exemplified by the so-called "all-round athlete." Taking all levels of ability in such motor skills, these data adduce the conclusion that the abilities are quite specialized, and that dependence should be upon tests of "abilities" rather than tests of "ability."

If these conclusions are substantiated by subsequent investigations involving different groups in a greater variety of traits, such as strength, endurance, reaction time, and so forth, some of the present concepts and practices in the field of physical education will need to be modified. The use of tests in a small sample of abilities for purposes of equalization for competition and for grouping into homogeneous units will be replaced by a greater number of single skill tests designed to measure abilities which are delimited and defined precisely.

RELIGIOUS LIBERALS AND CONSERVATIVES*

A DESIRE to search out the psychological differences between religious liberals and conservatives led the author of this study to make investigations that indicate that liberals differ from conservatives in some very definite personality traits.

Conservatives are defined as that type of persons who cling to orthodox and conventional religious opinions; liberals as those who reëstimate and reconstruct their opinions about religion, integrating them with newly discovered facts. These types are differentiated for comparison on the basis of religious thinking, which is represented as the process of forming general ideas about those experiences that have to do with the conceived higher values of life. These concepts may be true representations, misrepresentations, or rationalizations of religious experience but the way they are expressed is the usual grounds for estimating religious liberal and conservative tendencies. The instrument for detecting liberal and conservative tendencies in religious opinions in this study is the Test of Religious Thinking, Advanced Form A (Association Press). The method of scoring this test is shown to be an adequate measure of the distance which the opinions of those tested stand from the orthodox opinions about God, Jesus, Prayer, the Kingdom of God, Immortality, Sabbath Observance and Religious Education, Other Religions, and Life Purposes, the topics which constitute the eight parts of this test of one hundred questions.

A general estimate of the differences to be expected between the types thus separated was secured from a series of interviews with an adequate number of competent educators. The analysis of the results of these interviews suggested

* By THOMAS A. SYMINGTON, PH.D. Teachers College, Columbia University, Contributions to Education, No. 640.

certain areas of possible differences, and likely factors to be searched for. The battery of tests used along with the Test of Religious Thinking included an intelligence test, the Pressey Test of Emotions, the Allport Test of Ascendence and Submission, the Bernreuter Personality Inventory, and a questionnaire covering various aspects of personal and group experience in home, school, church-school, church, and social relations. These tests were assigned to a large number of persons in groups from both liberal and conservative areas in different parts of the United States and Canada.

The statistical examination of results reveals some thirty-two specific differences between liberals and conservatives in these groups. For example, liberals show a higher intelligence quotient, farther advancement in school or college, friends in wider social and religious circles; they consider fewer things wrong, discuss religion more with friends but not with parents, are inclined to take chances, to stick to a tiresome task, prefer books and reading to conversation, companions, or athletics, make decisions quickly and easily, uphold their decisions by argument, are less discouraged when their opinions differ from those of others, and are less self-conscious. These and various other findings warrant the general conclusion that liberals are more mature, independent, self-reliant, experimental, and democratic. Refusing the possibility of a cause and effect relation between these characteristics and the respective religious beliefs, the author traces identical elements and interprets religious thinking as a way of satisfying the needs of personality. Religious education is discussed as various ways of conditioning personality, and a sharp distinction is drawn between religious education that builds personalities with a view to passing on a set of religious beliefs and religious education that joins with general education in an effort to develop the type of persons who are likely to create more satisfactory ways of living for both individuals and society. The type of personality connected with liberal religion is held to be better suited for our world of change and reconstruction.

OCCUPATIONAL ABILITY PATTERNS*

THIS study attempts to answer the following questions: (*a*) To what extent do the scores of individuals in a specific occupation, when given intelligence, aptitude, and personality tests, tend to group around certain values in each test in such a manner as to form an occupational ability pattern peculiar to that occupation? (*b*) Are occupational ability patterns likely to be of value in fields of vocational guidance and selection?

During the year 1933 the Adjustment Service of New York City tested more than ten thousand adults. From the files of this organization were selected thirteen occupational groups, each group containing approximately fifty individuals. The following criteria were used in selecting individuals for these occupational groups: (*a*) at least three years of experience in the given occupation, (*b*) at least one year of employment with a single em-

* By ARTHUR F. DODGE, PH.D. Teachers College, Columbia University, Contributions to Education, No. 658.

ployer, and (*c*) a longer experience in the given occupation than in any other. Scores on the following tests were available for each of the selected individuals: Pressey Senior Classification Test, O'Connor Vocabulary Test, Minnesota Vocational Test for Clerical Workers (number-checking and name-checking), and the Bernreuter Personality Inventory ("nervous stability," "self-sufficiency," and "social dominance").

FINDINGS

Occupational ability patterns based on median scores are presented for each of the thirteen occupational groups and an analysis of these patterns leads to the following findings.

I. Significant differences exist among occupational groups with respect to abilities and traits measured by these tests.

II. The most significant differences indicated by this study are between clerical workers and salespeople.

(*a*) When the six clerical groups (four groups of women—stenographers, secretaries, office clerks, and bookkeepers, and two groups of men—accountants and bookkeepers) are combined into a single group of 300 and compared with a group of 154 salespeople (composed of retail salesmen, retail saleswomen, and traveling salesmen), a very significant difference is found with respect to ability in number-checking as measured by the Minnesota Vocational Test for Clerical Workers. The difference between the medians of these two groups is 9.46 times its probable error.

(*b*) When the two combined groups mentioned above are compared with respect to scores on "social dominance," the difference between the median scores is found to be 5.3 times its probable error.

III. In twenty-one instances, particular occupational groups stand out as significantly above or below the average of all groups combined with respect to scores on some one test.

IV. Occupational ability patterns derived from apparently similar occupational groups are similar: engineers and draftsmen, accountants and bookkeepers, and high school teachers and elementary school teachers.

V. Patterns derived from apparently dissimilar occupational groups are dissimilar: traveling salesmen and bookkeepers.

VI. Findings I to V relate to significant differences which were found among groups of *experienced* workers, but to use occupational ability patterns based on median or mean scores of these groups as a basis for the guidance or selection of *inexperienced* individuals would involve three assumptions:

(*a*) That the abilities of individual workers within an occupation approximate the central tendency of the group.

(*b*) That the abilities measured are but slightly affected by occupational experience.

(*c*) That an ability with respect to which an occupational group is superior is necessarily a factor favoring success in that occupation.

VII. In order to increase the potential value of occupational ability patterns as a basis for guidance, the following changes in present practice are suggested:

(*a*) Patterns should be based on single standard norms (instead of male and female) for all patterns to be comparable.

(*b*) Patterns should be based on minimum scores found to accompany success rather than on median or mean scores.

IMAGINATIVE BEHAVIOR OF PRESCHOOL CHILDREN*

FIFTY-FOUR preschool children in three nursery school units were observed during free play. The modified diary record used in recording imaginative incidents provided scores for frequency and versatility of imaginative behavior and for leadership in imaginative play.

Scores, in general, were found to increase with age. Mental age was slightly more highly correlated with imaginative behavior scores than was chronological age. No consistent or reliable sex differences were obtained. Age range and sex ratio within a nursery school group were found to influence imaginative behavior scores.

In addition to the quantitative analysis a qualitative study in terms of patterns of imaginative play was undertaken. Games involving personification and simple make-believe were found to predominate among two-year-olds. Three-year-olds, on the other hand, typically engaged in more complicated make-believe involving situations as well as objects, construction games, and dramatic play. A knowledge of such sequential patterns is essential in experimental study of imagination, since a technique adapted to the patterns typical of one age level only may result in fallacious conclusions.

Citations from the data are provided to illustrate the rôle of imaginative play in social development, guidance, and the growth of understanding. Typical differences in the content of imaginative games among privileged and underprivileged children are illustrated.

A second body of data was provided by two experimental situations designed to evoke imaginative responses, one a housekeeping game and the other a block-building test. Scores for frequency and versatility of responses were obtained. The correlations between the experimental scores and the scores obtained in observations during free play were insignificant, although the general findings with respect to age, sex, and mental age differences were similar in the two divisions of the study. Some discussion is devoted to problems of methodology and technique in the study of imagination in the light of the findings of the study as a whole.

Certain educational implications are indicated by the findings of the study. The analysis of sequences in patterns of imaginative play is suggestive for curriculum problems of grouping and equipment. Some of the illustrative incidents indicate the need for more thorough exploitation of imaginative interests in relation to learning.

* By FRANCES V. MARKEY, PH.D. Teachers College, Columbia University, Child Development Monographs, No. 18.

College & Alumni Notes

Advanced School of Education

At the fifth Advanced School Forum, held March 10, Professor Frederick L. Fitzpatrick spoke on the subject of "A Program of Science Education." This address was followed by a discussion of "The Selection, Organization, and Evaluation of Localities Available for Unspecialized Field Work in Earth Science in the New York City Region," by Mr. Herbert J. Arnold. The materials presented by Mr. Arnold are the results of his investigations in connection with the writing of his Doctor's dissertation. The Forum was followed by a tea and a period of informal discussion in the workrooms of the Advanced School. The gathering was addressed briefly by Director Paul R. Mort, who expressed appreciation for the good wishes of the students of the Advanced School on the eve of his departure for South Africa for a period of study of school support and organization.

By means of a grant from the Carnegie Corporation, Professor Mort has been enabled to visit during the next four months the schools of the Union of South Africa. His purpose is to discover the applicability of a method for comparing communities in American states with matched communities in countries financed entirely by central support, with the object of determining the relative adaptability of the two types of school systems and the means by which adaptations to new needs come about. The technique for carrying on such a study has been developed during the past two years under the auspices of the Council for Research in the Social Sciences at Columbia University. Applications of the techniques have been made in this country to forty communities in Delaware, New Jersey, and Pennsylvania.

The investigation, for which this is only a preparatory step, is being conducted for the purpose of throwing more light on the principle of effort in school finance. Much of Professor Mort's work during the past fifteen years has dealt with the financial implications of the principle of educational need. This work has clarified somewhat the policy of state and national payment for effort, and has opened up lines of investigation that promise to have an important bearing on the present practice of local taxation for schools used in this country, on movements for relieving property tax of undue burdens as a means of stimulating local initiative, and on the tendencies toward state tax limitations which are now operating in the opposite direction.

In the American practice much dependence is placed on local initiative supported by local taxing power, in order to encourage experimentation and thereby the adaptation to new needs. Professor Mort is interested in discovering the ways and means which are utilized to obtain the same ends in the countries which do not utilize local taxing power.

Administration of School Systems

The Administration Club met at the home of Professor and Mrs. George D. Strayer in Riverdale on March 7. Professor

John K. Norton spoke to the group on the work of the Educational Policies Commission of the National Education Association. A social hour followed.

Professor Strayer attended the educational conference held at Juniata College, Huntingdon, Pa., on March 13 and 14. He delivered two addresses to the conference, "Federal Relations to Education" and "The Realization of the Promise of Democracy through Public Education." Professor Strayer also participated in the Music Educators National Conference held at the Metropolitan Opera House March 29 to April 3, and addressed the general session on March 30.

Professor N. L. Engelhardt addressed a community gathering at Scotia, N. Y., March 19 on the topic of "The National Government and Public Education." During the Schoolmen's Week meetings, held at the University of Pennsylvania March 25 to 28, Professor Engelhardt spoke before four groups on the following subjects: "Teacher Participation in School Administration," "The Responsibilities of a State Department of Education," "Modern Trends in School Building Planning," and "How Shall Adequate Provisions Be Made for State School Support?"

An address delivered by Professor Engelhardt at the Richmond, Va., Convention of the National Association of Public School Business Officials in 1931 appears in the March 1936 number of the bulletin *School Business Affairs*, a publication which this organization has begun to issue.

The eighth annual yearbook of the American School Publishing Corporation, *American School and University*, has just come from the press. It contains an article on "Approaching Changes in School Plant Planning" by Professor Engelhardt, and a "Bibliography of Fifty Outstanding Books on School and College Buildings" by William J. Lowry, Scholar in the Advanced School of Education.

Adult Education

The first product of the Readability Laboratory has appeared under the imprint of The University of Chicago Press. It is a discussion manual for use with the American Primers under the title of *Let's Talk It Over*, by Mildred J. Wiese in collaboration with Lyman Bryson and Wilbur C. Hallenbeck.

The *Yonkers Journal of Adult Education* appeared with the January number in a sixteen-page magazine form. The leading article, "What Is Adult Education?", is by Wilbur C. Hallenbeck, associate in Adult Education. The editor-in-chief, Melvin H. Kempton, and the managing editor, William A. Burns, are majors in Adult Education.

An exhibit of modern textbooks sponsored by the American Institute of Graphic Arts was opened at the National Arts Club on February 5 by Professor Bryson, who gave a talk on "The Textbook of the Future."

Professor Bryson gave the first of a series of three Sunday night lectures at Cooper Union on February 23. The general subject was "Public Opinion." He spoke at the Public Forum of Springfield, Mass., February 28 on "The Civilization of the Middle West." A lecture on the "Civilization of the American Far West" followed on March 6.

Child Development Institute

"Backyard Playgrounds," by Miss Christine Heinig, appeared in the April issue of *The Woman's Home Companion*.

As a member of the National Advisory Committee on Emergency Nursery Schools, Professor Lois Hayden Meek attended their meeting in New York on February 6.

Professor Meek visited the Ottawa, Canada, schools on February 12 and spoke before the teachers of that city at their Institute held February 13. Her subjects were "The Effect of the School on Children's Behavior" and "Emotional Maturity and Education."

Alumni of the Institute were guests of the staff at a coffee hour on February 12 at the Women's Faculty Club of Columbia University.

A presentation of the research program of the Family Consultation Bureau was made on February 18 to the Research Discussion Group at the Institute under the chairmanship of Professor Arthur T. Jersild, with the co-operation of the staff.

Professor Meek and Dr. Gertrude P. Driscoll took part in the Progressive Education Association conference, held in Chicago February 27 to 29.

Commercial Education

Mrs. Esta Ross Stuart was elected a director of the National Association of Commercial Teacher Training Institutions, at the meeting of the Association held in St. Louis on February 22.

Curriculum

On January 20 Professor H. B. Bruner held three meetings in Cincinnati on curriculum problems. The morning meeting was with Superintendent Roberts and assistant superintendents and directors. Questions regarding steps to be taken in a program of continuous curriculum revision were discussed. The afternoon meetings were held with the language arts and social studies committees of the elementary grades. Miss Fannie J. Ragland presided.

At a meeting of the Society for Curriculum Study, held February 22 in St. Louis, Professor Bruner participated in a panel discussion on "The Place of Evaluation in the Instructional Program." While in St. Louis he also presented a paper on "Some Questions Which Must Be Answered in Any Sound Program of Continuous Curriculum Revision" at a meeting of the Vocational Guidance Association; discussed "Some Difficulties Involved in Constructing Curriculum Material in Socio-economic Areas" at a joint meeting of the American Educational Research Association and the National Society for Curriculum Study; and gave a radio broadcast on the topic "Society and the Curriculum." At the Department of Superintendence meeting he defended the affirmative on the question "Can the administrator exercise real leadership in a curriculum revision program involving continuous experimentation?" at one of the Directed Group Debates, and as a member of the Yearbook Commission of the Department of Superintendence assisted in its presentation in the auditorium.

Professor L. Thomas Hopkins recently returned from a trip to Texas, where he addressed the members of the Central Texas Division of the Texas State Teachers Association at Temple on "Philosophy and the Curriculum" and "Utilizing Organismic Learning." He also gave a general address and worked with committees of teachers at Waco and Corsicana, and spoke before the student body and members of the faculty of Baylor University, Waco. From there Professor Hopkins went to Huntsville, where he addressed the student body and faculty members at the Sam Houston State Teachers College.

At the Department of Superintendence meetings in St. Louis, Professor Hopkins gave the report of the Committee on Integration of the Society for Curriculum Study; argued the affirmative in the Directed Group Debates on the topic "The needs of the child should transcend effort to maintain 'minimum essentials' in curriculum revision"; presented a paper before the American Educational Research Association on "The Problem of Measurement Involved in Integration"; and gave an address at the banquet of the Department of Adult Education on "Values in Adult Education." Returning from St. Louis, Professor Hopkins stopped at Bloomington, Ill., and gave an address before the members of the staff of the Bloomington public schools and the student bodies and faculty members of Illinois Wesleyan University and Illinois State Normal University on the topic "The Place of Philosophy in Curriculum Development."

Professor Hopkins spent February 28 and 29 in Chicago attending the meetings of the Progressive Education Association. While in Chicago, he took the opportunity of conferring with Professor J. W. Buchanan of Northwestern University, who is contributing a chapter on "The Biological Basis of Integration" to the Yearbook on Integration of the Society for Curriculum Study. Professor Hopkins is chairman of the committee which is preparing this yearbook.

On March 4 Professor Hopkins gave the sixth in a series of eight addresses on the curriculum before the members of the Yonkers Principals' Association.

Educational Psychology

On February 12 Professor E. L. Thorndike spoke at the Forum of the Advanced School of Education to a group of alumni and students on "The Goal for Social Effort," outlining those items he thought most necessary for the good life of man.

Professor Percival M. Symonds attended meetings of the National Education Association at St. Louis February 24 to 26 and the meetings of the Progressive Education Association and the Child Study Association at Chicago on February 27 and 28. He read a paper before the meeting of the Child Study Association on "Projection as a Factor in Family Adjustments" and one before the Progressive Education Association on "Problems and Interests of Older Adolescents."

At the recent meetings of the Department of Superintendence held at St. Louis, Professor Arthur I. Gates spoke before the American Educational Research Association on "Reading Readiness"; before the National Conference on Research in Elementary School English on "Needed Research in Elementary School Reading"; and before one of the section meetings of the Department of Superintendence on "The Use of Workbooks, Textbooks, and Other Materials in Teaching Reading."

Dr. George W. Hartmann, Fellow of the Advanced School of Education, gave an address on "Some Field Experiments in Political Psychology" before the New York Academy of Sciences at the Museum of Natural History on January 22. A volume on political psychology, containing this and other material, will be published before the end of the year.

Dr. Hartmann acted as chairman of the round tables held in conjunction with the annual banquet of the American Educational Research Association in St. Louis on February 24. He also led an informal discussion on "The Relations between Gestalt Psychology and Teaching Technique."

The program committee of the New York Branch of the American Psycho-

logical Association, of which Dr. Hartmann is a member, met in Philadelphia on March 7 to prepare for the annual spring meeting of this organization to be held at Fordham University, New York City, in April.

Professor Hadley Cantril gave a public lecture at Princeton University February 13 on "Symbols in Social Life."

Educational Sociology

Professor Heber Harper gave an address at the dinner meeting of the American Association for Adult Education, held in St. Louis in February, and spoke at section meetings of the Department of Adult Education of the National Education Association. En route from St. Louis to New York, Professor Harper addressed The Hungry Club of Pittsburgh, Pa., the Ben Avon, Pa., High School, and Allegheny College, Meadville, Pa. In April, Professor Harper will speak at the University of Colorado, the State Teachers College at Greeley, the University of Denver, Colorado College, and the Fountain Valley School. He will also give a series of addresses in Denver under the auspices of the Foundation for the Advancement of the Social Sciences.

Elementary Education

Discussions in the major course in Elementary Education are being devoted largely to the practical aspects of the curriculum. Consideration is being given to the following topics at the request of the students: the organization of the curriculum, including such possibilities as the unit of work, the core curriculum, and the activity program; progressive tendencies in elementary education in other communities; meeting the arguments against the activity program; the evaluation of the newer aspects of elementary education, including the use of educational measurement and statistics; and trends in materials of instruction for elementary schools.

To supplement discussions and to make activities more practical, students have organized themselves into groups for the purpose of giving assistance to teachers and principals of Rutherford, N. J., on eleven specific problems. This assistance was requested by the elementary school workers in Rutherford as an outgrowth of the survey which has been conducted by the Division of Field Studies of Teachers College.

Many students are visiting public and private schools in and near New York City on Mondays, Wednesdays, and Fridays. While this visitation is optional, they are finding it a splendid opportunity to evaluate the more theoretical discussions in class meetings. An optional discussion group is held each Wednesday at two o'clock in Room 278 Annex. Another group meets on Thursday afternoons at the same hour to discuss current events in education.

The Elementary Education Club has elected the following officers for the second semester: president, Miss Elizabeth Burns, Winona, Minn.; vice-president, Miss Wanda Robertson, Fountain Green, Utah; secretary-treasurer, Mr. Lon P. Monbeck, Winamac, Ind.; and student council representative, Miss Leila Lavin, Spokane, Wash.

At the coffee hour on March 5, Miss Herminia Acevedo, Mr. Francisco Gaztambide, Miss Francisca Otero, and Mr. Julio Sellés-Solá, all of Puerto Rico, served Puerto Rican coffee to the group.

All former members are cordially invited to these informal gatherings, which are held at three-fifteen each Thursday afternoon.

Professor J. R. McGaughy served as chairman of a panel discussion on "Progressive Trends in Other Cities" at a sectional meeting of the Society for the Experimental Study of Education, held on March 13. Students from the Elementary Education major course composed the panel. Mr. Walter A. Anderson, Minneapolis, Minn., made the opening statement. The following students represented other cities: Miss Evelyn G. Bell, Buffalo, N. Y.; Miss Helen L. Bradley, Toledo, Ohio; Miss Viola M. Cassidy, Cleveland, Ohio; Miss Alice Fassett, Dayton, Ohio; Miss Bertha B. Friedman, Montreal, Can.; Miss Leila Lavin, Spokane, Wash.; Mrs. Lenore L. Marsh, Los Angeles, Calif.; Miss Martha L. Newman, Rochester, N. Y.; Mrs. Elizabeth Pomeroy, Montclair, N. J.; and Miss Virginia R. Staub, Washington, D. C.

Professor Jean Betzner has recently addressed educational meetings in Cleveland and Akron, Ohio, and Philadelphia, Pa.

Miss Roma Gans gave a radio address over Station WNYC on March 11. Her topic was "The Greatest Economy in Education." Miss Gans has addressed educational meetings recently in Wyoming, Del., Mount Kisco, N. Y., and Glenwood Landing, N. Y.

Professor M. B. Hillegas conducted a group of thirty students to Public School No. 45, The Bronx, on March 9. Members of the group were entertained at luncheon by Mr. Angelo Patri, principal of the school.

The next Conference for Elementary School Workers will be held at Teachers College on May 15 and 16, under the direction of the members of the staff in Elementary Education.

English

Professor Ida A. Jewett spent March 27 and 28 at the Spring Conference held by Indiana, Pa., State Teachers College. At the general session Professor Jewett was the only speaker, talking on the topic "What Is New in the Recently Published *Experience Curriculum?*" At the afternoon session there was held a round table discussion in which Professor Jewett was one of the participants.

Professor Henry W. Simon has been appointed phonograph critic for *The Nation.*

Guidance Laboratory

On a recent trip Professor Esther Lloyd-Jones spent some time studying the functions of various educational, mental hygiene, and psychological clinics. Of those visited, Dr. Arnold Gesell's clinic at Yale University is undertaking by far the most intensive and ambitious research program. This clinic, with an intake of more than a thousand patients a year, offers a very valuable service to the community. The Scientific Crime Detection Laboratory of the Law School of Northwestern University is doing interesting work in the field of detection of deception. The methods being employed there could probably be applied with value to the study of emotion and interest in the normal individual. Other clinics are affording their communities valuable resources in the field of mental hygiene. A few clinics, attached directly to school systems or connected with universities, offer the schools expert help in educational diagnosis and behavior difficulties. None of the clinics visited is attempting to offer any observation or training opportunities to more than a very few individuals. The Guidance Laboratory at Teachers College seems unique in that it has as its primary purpose offering to large numbers of classroom teachers an

opportunity to appreciate the resources that are available to anyone who has a guidance point of view, as well as offering laboratory facilities to many graduate students who are intending to become specialists in the several professional fields that serve education.

Dr. Margarete Simpson addressed a membership luncheon of the Cosmopolitan Club recently on "What the City of Vienna Is Doing for Its Problem Children." On March 16 Dr. Simpson addressed a parents' group on "What Relationship Is There between the Intelligence Quotient, School Achievement, and Future Success?"

Guidance and Personnel

At the annual convention of the National Vocational Guidance Association and allied organizations, which was held in St. Louis February 19 to 22, Professor Harry D. Kitson conducted a broadcast over the nation-wide network of the Columbia Broadcasting System, arranged as a demonstration of the work of the Committee on Vocational Guidance of the National Advisory Council on Radio in Education (Professor Kitson, chairman), which presents a program every Friday sponsored by the American School of the Air. This broadcast, entitled "Vocational Guidance for the Youth of Your Community," brought before the microphone the national officers of certain agencies commonly represented in most communities, who described the particular part played by each agency in community guidance for youth.

An important feature of the convention of the Association was the commercial exhibit, which was arranged and presided over by Dr. Roy N. Anderson. Students of Guidance and Personnel who attended the convention were: Forrest H. Kirkpatrick, Iona M. R. Logie, Benjamin Pukatch, Edgar M. Stover, and Henry K. Stubenrauch.

On February 18 Professor Kitson addressed a dinner meeting of about one hundred Teachers College alumni at the College Club, Cleveland, Ohio. On February 20 he addressed The Forum, a luncheon club of two hundred business men in St. Louis, on the topic "Guidance for Youth—A Community Responsibility."

On February 24 Dr. Anderson conferred with a group of community leaders in Omaha, Neb., regarding the inauguration of a program of vocational guidance in the Young Women's Christian Association.

Miss Frances Ross (A.M. 1935), who for the past year has been serving as vocational counselor in the Bureau of Vocational Service, Los Angeles, Calif., has been appointed secretary in the office of Guidance and Personnel.

Student Personnel Administration

On March 7 a group of about eighty-five deans and advisers in the high schools and colleges of the metropolitan area met for luncheon at the Women's Faculty Club of Columbia University, under the chairmanship of Professor Harriet Hayes, to hear a report of the St. Louis meetings of the various guidance and personnel associations. The members of the Student Personnel Administration Club acted as hostesses. Professor Esther Lloyd-Jones reported the American College Personnel Association meetings and Professor Sarah Sturtevant those of the American Council of Guidance and Personnel Association. Mrs. Ruth C. Wright, dean of women at the College of the City of New York, Miss Helen

Pritchard, dean of girls at Hartford High School, Hartford, Conn., and Miss Margaret MacDonald, dean of girls of Cheltenham Township High School, Elkins Park, Pa., reported the meetings of the National Association of Deans of Women.

One of the most interesting sessions of the American College Personnel Association at the recent annual conference held in St. Louis was a round table discussion, at which the president of the Association, Professor Lloyd-Jones, was chairman. Dr. A. J. Brumbaugh, dean of the college and dean of students at the University of Chicago, as well as vice-president of the Association, opened the discussion, telling of his observations during the past year. He has visited about one hundred colleges as a representative of the North Central Association of Colleges and Secondary Schools. One of his responsibilities in this capacity has been to survey and evaluate the personnel work being done in these institutions. Another speaker was Dr. Eugene Lyman, recently appointed director of the division of Student Personnel Administration at Northwestern University. Northwestern has a very much expanded division of personnel work which includes the whole university as a result of a thorough survey made by an outside agency during the past year.

Another interesting feature of the discussion was a paper prepared by Dr. W. H. Cowley of Ohio State University, which examined critically the various definitions of scope and function that have been proposed by leaders in the personnel field. Certain of the participants in the round table, Dr. E. K. Strong of Stanford University, for instance, felt that it was fruitless to devote much energy and thought to defining and delimiting in theoretical terms; that the differing service needs in each institution would determine the direction that personnel work would take in that particular institution. There was considerable feeling, however, that the American College Personnel Association could serve the professional field by a re-examination of the scope and functions of personnel work and its relation to education.

On February 5 Professor Sturtevant addressed a luncheon meeting of the Girls' Service League of America on "A Scientific Approach to Homemaking," in behalf of its pioneering effort toward the systematic preparation of girls for service as helpers in homes. On March 10 she spoke before the Kingston College Woman's Club at the State Normal School in New Paltz, N. Y., on "The Significance of the Guidance Movement in High Schools and Colleges."

Former students of Teachers College were elected to the following positions of leadership in the National Association of Deans of Women: Miss Helen Pritchard of Hartford High School, Hartford, Conn., secretary of the Association; Miss Leslie Blanchard, dean of Hollins College, Hollins, Va., chairman of the College Section; Miss Margaret MacDonald of Cheltenham High School, Elkins Park, Pa., chairman of the High School Section; and Miss Blanche Davidson, dean of women at DeKalb State Teachers College, DeKalb, Ill., chairman of the Teacher Training Section.

Horace Mann School

Professor Rollo G. Reynolds recently returned from Mount Clemens, Mich., where he addressed the County Education Association on "What Shall We Teach Them?" and "Common Sense in Education."

Dr. Ina C. Sartorius, Dr. Cecile White Flemming, Miss Mary Harden, and Professor Rollo G. Reynolds participated in the St. Louis convention of the Depart-

ment of Superintendence of the National Education Association, held February 22 to 27. After the convention, Dr. Sartorius addressed a teachers' meeting at Auxvasse, Mo., on "Reading and Arithmetic Problems," and discussed textbooks for elementary school use.

Miss Harden, Mrs. Mary C. Marshall, and Dr. Flemming represented the School at the national convention of the Progressive Education Association, held in Chicago February 27 to 29. Mrs. Marshall is a member of the Committee on Evaluation of Reading of the Commission on the Relation of Schools and Colleges and of the subcommittee on the teaching of English of the Thayer Commission on the Revision of the Curriculum. Miss Harden is a member of the Committee on the Discussion of Objectives of the Commission on the Relation of Schools and Colleges.

A new class magazine, *The Book Marc,* is being published by the Second Year girls. Jean Vandervoort is editor-in-chief. All members of the class will contribute articles and stories.

The second issue of the new French magazine, under the editorship of Olive Holmes, is scheduled to make its appearance in April.

Miss Harden participated in a panel on "Integration within the Elementary School" before the Nassau County Elementary School Principals on April 2 at Hempstead, L. I. The panel was one of a series on the general theme "Coördination of the Elementary School with Community Life."

The new elementary spellers, *How to Spell,* by Professor Reynolds and Dr. Sartorius, are being published by Charles Scribner's Sons. They are the result of an experiment in a new type of spelling based on games and interesting reading materials.

Dr. Cecile White Flemming spent February 17 to 22 at Ohio State University in conference with the evaluation staff of the Eight-Year Study of the Progressive Education Association Commission on the Relation of Schools and Colleges. Dr. Flemming is directing studies in the evaluation of study skills and attitudes as a part of this total program. New techniques and instruments in observing and evaluating abilities in reading and study for the secondary school are being developed. At the St. Louis meetings in February Dr. Flemming presided at one of the round table discussions following the annual dinner of the American Educational Research Association. The topic discussed in her group was "The Evaluation of Study Skills and Attitudes in Secondary School and College." She also presided at two meetings of the National Department of Secondary Education, which were concerned with research in the use of the motion picture in the secondary school today.

Dr. Flemming is chairman of the Research Committee on Motion Pictures, and is serving on the advisory board and preview committee of the General Committee on Motion Pictures, organized this year by the National Department of Secondary Education.

Household Arts

Professor Wilhelmina Spohr and Miss Dorothy DeLong Scott, a student in the Advanced School of Education, participated in the Evansville, Ind., school survey early in February.

Professor Spohr was the guest speaker at a conference of home economics teachers, held in Elizabeth, N. J., March 2. She also participated in the round table on

Homemaking at the annual conference of the Junior High School Principals Association of New York City, which was held on March 21.

Professor Cora M. Winchell is absent on leave during the Spring Session. Word comes of her interesting experiences in Florida and other southern states.

Professor Mary Evans, on leave during the Spring Session, spent the month of February in Florida. Early in March she sailed for England. While abroad Professor Evans plans to visit England, Wales, Spain, and the Scandinavian countries.

Miss Mildred P. French, a former member of the Household Arts Education staff and now dean of women and dean of home economics at Connecticut State College, Storrs, Conn., is a student in the Advanced School of Education during the Spring Session.

Miss Bertha E. Shapleigh, formerly a member of the Household Arts staff, died March 24 in California. After she retired Miss Shapleigh made her home in Carmel, Calif., spending the winters in the Sacramento Valley.

Industrial Arts Education

Professor Fred Strickler and Mr. C. R. Hutchcroft, teacher of industrial arts in the Lincoln School, spent the last week of February in Evansville, Ind., where they took part in the survey of the city schools which is being conducted by the Division of Field Studies of Teachers College.

On February 18 Professor Strickler addressed the members of the Industrial Arts Education Association of Long Island at the Garden City meeting.

Library

Professor Eleanor M. Witmer addressed the librarians of Philadelphia and vicinity at Drexel Institute recently on "The Problems of Library Decoration."

Miss Ruth Budd, supervisor of the School Library Laboratory, met the parents and teachers of the Yonkers Elementary School No. 3 on March 3 and discussed with them the improvements and development of their school library.

Miss Katherine L. Flanner, Miss Ethel M. Feagley, Miss Harriet R. Forbes, and other members of the staff have recently reviewed new books for the Graduate Club coffee hour group.

A graduate seminar for teachers college librarians will be conducted by Professor Witmer and Miss Feagley at the Columbia University School of Library Service during the Summer Session.

A survey of the Wrenn collection of rare books at the University of Texas, Austin, was made by Miss Budd and is reported in the February 15, 1936 issue of *The Library Journal.*

Classroom Literature for April deals with materials on "The Stories Behind the Things We Use."

The following books comprise a monthly list of balanced reading in the field of education.

ALMA MATER: The Gothic age of the American college. By Henry Seidel Canby. Farrar, 1936. Personal experiences of the editor of *The Saturday Review of Literature*, both as a student and as a teacher.

THE NEXT HUNDRED YEARS, the unfinished business of science. By Clifford Cook Furnas. Reynal, 1936. The future of applied science and how it might modify the social scene.

THE CONDUCT OF THE SCHOOLS OF JEAN-BAPTISTE DE LA SALLE, translated by Francois de la Fontainerie. By Jean-Baptiste de La Salle. McGraw-Hill, 1935. A careful study of La Salle's educational system, with notes on the characteristics of the ideal teacher.

CREATIVE RE-EDUCATION. By Frederick Peterson. Putnam, 1936. Re-education of the adult in terms of character building.

THE MOUNTING WASTE OF THE AMERICAN SECONDARY SCHOOL. By John Lee Tildsley. Harvard University Press, 1936. An attempt to evaluate the shortcomings and achievements of American secondary education.

THE GROWTH OF AMERICAN HIGHER EDUCATION; LIBERAL, PROFESSIONAL, TECHNICAL. By Elbert Vaughan Wills. Dorrance, 1936. Well-planned historical survey of the various phases and trends in American higher education.

Professor Carter Alexander gave a lecture on "The Technique of Library Searching" before the New Jersey Chapter of the Special Libraries Association at Newark on March 5. An article based on this talk is scheduled for publication in *Special Libraries*.

Mathematics

Professor W. D. Reeve was one of five Teachers College professors who spent a few days during the week of February 17 visiting the new College Plan at the University of Chicago. On February 21 he was the guest speaker at a special joint dinner of the Men's and Women's Mathematics Clubs of Chicago at the Central Young Men's Christian Association, and spoke on "Pressing Curriculum Problems in the Teaching of Mathematics."

Music Education

Mr. Raymond Burrows and Mr. Anthony Loudis, music instructor in the Teaneck, N. J., High School, appeared in a two-piano program on March 4 at a meeting of the Columbia Dames in the Grace Dodge Social Room. Mr. and Mrs. Miles Dresskell gave a program of voice and viola d'amore selections for the Columbia Dames on February 19.

Mr. Jack J. Morrissey was musical director of the Columbia Varsity Show, which was given at the Hotel Lismore on April 1, 2, and 3.

The Teachers College String Quartet, Mr. Dresskell, director, gave its bimonthly musicale in the Grace Dodge Social Room on February 28. These musicales are given for the students who care to have a quiet half-hour of listening to music masterpieces.

Dr. E. J. Stringham has recently finished a string quartet, performance of which is due in New York City in April and later in the year in Denver. The Chicago Symphony Orchestra played Dr. Stringham's symphonic poem, Nocturne, the latter part of March.

Professor N. L. Church addressed the Fort Lee, N. J., High School March 5 on "Music as a Vocation." At the Music Educators National Conference he served as chairman of the panel discussion on "Elementary Music Material," and took part in the panel discussion of the general session, which was presented by twelve members of the Teachers College staff. Professor Church was in charge of the Sinfonia activities, including the banquet at the Hotel Pennsylvania on March 31. On April 18 he will be guest conductor of the Connecticut All-State Orchestra, and on April 24 will serve as adjudicator at the Eisteddfod Festival, Alumni Hall, Western Maryland College, Westminster, Md.

Professor Peter W. Dykema is giving a series of twelve lectures on Music Ap-

preciation for two hundred teachers in New Haven, Conn. These lectures are being given at Sprague Hall, Yale University.

In March, Carl Fischer, Inc., published a cantata by Professor Dykema, entitled Robin Hood and Allin A Dale, written for soprano and alto chorus with orchestra or piano accompaniment.

Professor Dykema presided at the second general session of the Music Educators National Conference, held at the Metropolitan Opera House March 30. Five short addresses on "The Place of Music in the Curriculum" were given by Professors Dykema, W. H. Kilpatrick, Thomas H. Briggs, J. L. Mursell, and George D. Strayer. These were followed by a panel discussion participated in by Professors Alice Bivins, Lyman Bryson, N. L. Church, L. T. Hopkins, Harold Rugg, Florence B. Stratemeyer, and Goodwin Watson.

Professor James L. Mursell addressed the National Society for the Study of Education on "A Balanced Curriculum in Music Education" at a meeting held in St. Louis on February 25. He also took part in a panel discussion of "Creative Expression in the Development of Children" at a meeting of the Progressive Education Association held in Chicago on February 28.

Two articles, "Principles in Music Education" and "Reading in Music Education," by Professor Mursell, appear in the thirty-fifth Yearbook, Part II, of the National Society for the Study of Education.

Natural Sciences

Professor S. R. Powers, together with other members of the College staff, spent February 17 to 20 at the University of Chicago studying the new College Plan.

Dr. Paul B. Sears, professor of botany at the University of Oklahoma, has been added to the staff of research associates in Natural Sciences.

Normal School Education

Professor E. S. Evenden, who is on sabbatical leave during the Spring Session, returned to the College the first of March to spend some time in consultation with students who are candidates for the Doctor's degree. He sailed for Europe the latter part of the month.

Nursery School and Kindergarten-First Grade Education

Professor Mary M. Reed attended the Progressive Education Association meeting at Chicago in February. She took part in the session which discussed the social science program for children from two to eight years of age.

Arrangements are being made to use the Hillside Homes Development as the practice center for students wishing to become directors of community educational programs for children from birth to six years of age in large housing centers. The European course, which will be given this summer under the leadership of Miss Agnes Burke, will place some emphasis on this new venture.

At the Progressive Education Association meeting, held in Chicago February 28 and 29, Miss E. Mae Raymond and Miss Lula E. Wright had many interesting contacts with Nursery School and Kindergarten–First Grade Education alumnae who are taking active leadership in the field of early education.

On February 25 Miss Alice Thorn addressed the Indianapolis Free Kindergar-

ten Association, of which Miss Grace Brown, formerly a member of the Nursery School and Kindergarten–First Grade Education staff, is director, and on the following day, the Division of Childhood Education of the Department of Superintendence at St. Louis, of which Dr. George Stoddard was division chairman.

A short account of Professor Patty Smith Hill's professional career will appear in serial form in *American Childhood*, beginning in the June 1936 issue. This account, written by Mr. Benjamin Fine of the Bureau of Educational Service, Teachers College, is based on materials obtained through interviews, old letters, newspapers, and magazine articles written by well-known educators from 1887, when Professor Hill entered upon her educational work, to June 1935, when she retired, having completed her forty-eighth year in the field of early childhood education and parental education.

Nursing Education

Professor Isabel M. Stewart spoke at the meeting of the New Jersey League of Nursing Education, held February 7 at Newark. The discussion centered about the work of the State Curriculum Committee, which is co-operating actively in the national study on the Nursing School Curriculum.

Miss Mary E. Chayer attended the session in St. Louis of the Joint Committee on Health Problems of Education of the American Medical Association and the National Education Association. This committee is preparing a report on the interpretation of school nursing for the use of school administrators.

A number of curriculum study groups have been organized among students in Nursing Education. These groups are co-operating with the Curriculum Committee of the National League of Nursing Education. This committee has its headquarters in the Nursing Education Office, Teachers College.

Religious Education

Professor Adelaide T. Case has recently completed a series of three lectures in religious education, given under the auspices of the Private School Committee of the Junior League. These lectures dealt with "Basic Problems in Modern Religion," "Reconstruction of the Sunday School," and "Religion in Present-day Home Life." As an element in the course, the group of parents organized their convictions into a series of statements to be used in the reconstruction of the program of religious education in New York City churches.

The annual meeting of the International Council of Religious Education was held in Chicago February 10 to 13. Professor Case addressed various sections of the meeting and presented a report to the Children's Division on "Trends and Developments in the Current Year." She was appointed chairman of the Parent Education Committee for the coming year.

Miss Margaret Forsyth recently conducted a panel discussion at the annual meeting of the Foreign Division of the Young Women's Christian Association on the topic "The International Public Affairs Program."

Professor Case spent the week-end of February 21 to 24 in Baltimore. She spoke at the annual parish dinner at the Procathedral on "Opportunity and Responsibility in Religious Education"; addressed two groups of parents and a group of Goucher College students on "The Church in Contemporary Life";

and attended the annual meeting of the Church League for Industrial Democracy, of which she is a member of the Executive Committee.

Secondary Education

Professor Elbert K. Fretwell delivered an address before the Child Education Section of the Seventh Annual Greater New York Safety Conference, which met in the Hotel Astor March 5. His topic was "Teaching Effectively or Wasting Time?" and consisted of an evaluation of the present methods of safety education and of an outline of the type of educational program which actually reduces accidents among children. Dr. Albert Whitney, Vice-president for Education of the National Safety Council, was chairman of this section of the Conference. Professor Fretwell also addressed the secondary group meeting of the Conference of the Second Supervisory District of Suffolk County, held at Bellport, N. Y., March 16; Mr. Earl B. Robinson, supervising principal of the Islip, N. Y., schools, was chairman. The subject of his address was "A Constructive Rôle for Youth in Our Schools." At the annual conference of the New York City Junior High School Principals' Association, which was held in the Hotel Astor March 21, Professor Fretwell, together with Dr. P. W. L. Cox of New York University, led a panel discussion on the topic "Socializing Junior High School Life." Miss Mary Hallinan, principal of Junior High School No. 81, Manhattan, acted as chairman. The program was arranged by Mr. Edward R. Maguire, principal of Herman Ridder Junior High School, The Bronx.

At the invitation of Mr. John Coulbourn, principal of the Garden City, N. Y., High School, Professor Fretwell addressed the Parent-Teacher Association of that school March 23 on "The Place of Extra-curricular Activities in the School Program." He was the principal speaker at the dinner meeting of the Eastern District of the American Physical Education Association, which met at Syracuse, N. Y., March 26. Miss Ruth Evans of Springfield, Mass., was in charge of the dinner meeting.

Mr. William H. Bristow, a student in Secondary Education and formerly Director of the Curriculum Bureau and assistant to the Director of Education for Pennsylvania, has recently been appointed General Secretary of the National Congress of Parents and Teachers, with headquarters in Washington, D. C.

Dr. Michael H. Lucey, principal of Julia Richman High School, New York City, was the speaker at the Secondary Group meeting held at the Men's Faculty Club of Columbia University March 30. He outlined the underlying philosophy and the procedures used in that high school in caring for individual pupils and directing them toward adequate solutions of their personal and academic problems.

Mr. James H. Moyer addressed the faculties of the junior and senior high schools of Westwood, N. J., February 11 on the topic "Directed Learning."

Bureau of Educational Service*

The following list continues the appointments reported by the Bureau of Educational Service in the March RECORD:

Maher, Katherine J. (A.M. 1934), appointed teacher of third and fourth grades, Public Schools, Manhattan Beach, Calif.

* Any student who is taking or has taken twelve points of work at Teachers College or any graduate of Teachers College may register with the Bureau of Educational Service. No fee is charged. For full information write to the Bureau for copies of its booklets, *Seven Factors in Getting a Position* and *The Right Person for the Right Position.*

Marimon, Henrietta (A.M. 1929), appointed general secretary, Young Women's Christian Association, Akron, Ohio.

Marles, Laura (A.M. 1932), appointed case work supervisor, Division of Vocational Rehabilitation, State Department of Education, St. Paul, Minn.

Massee, Margaret, appointed assistant dietitian, Christ Hospital, Jersey City, N. J.

Mautz, Marjorie, appointed teacher of English, St. Helen's Hall, Portland, Ore.

McClure, Ann D., appointed supervisor of music, Conneautville Vocational School, Conneautville, Pa.

McCoy, J. Hamilton, appointed assistant professor of Spanish, Centre College, Danville, Ky.

McCully, Dorothy L., appointed teacher of English and dramatics, High School, Scarsdale, N. Y.

McDermott, Catherine M. (A.M. 1935), appointed county nurse, Health District No. 7, Gladwin, Mich.

McLemore, Dorothy (A.M. 1933), appointed assistant in music, Keene Normal School, Keene, N. H.

McPherson, Gertrude R. (A.M. 1932), appointed director of McGuffy Kindergarten, Miami University, Oxford, Ohio.

Meyers, Helen (B.S. 1935), appointed teacher of music, Sherman School, Toledo.

Miller, Dorothea H. (A.M. 1933), appointed teacher of English, Fairmount School, Hackensack, N. J.

Miller, Marjory, appointed supervisor of music, Public Schools, Ketchikan, Alaska.

Moose, Manuel F., appointed instructor in chemistry and physics, Little Rock Junior College, Little Rock, Ark.

Nordly, Carl L. (A.M. 1933), appointed assistant professor of physical education, University of Minnesota, Minneapolis.

O'Gorman, Bernadine (A.M. 1935), appointed teacher of seventh grade, Israel Putnam School, Putnam, Conn.

Olds, Tullye B., appointed associate head of department of rural education, State Normal School, Potsdam, N. Y.

Ort, Catherine (A.M. 1935), appointed instructor in home economics, University of Delaware, Newark, Del.

Palmer, Vivien M., appointed associate professor of sociology, Texas State College for Women, Denton, Tex.

Pate, Laura R. (A.M. 1933), appointed director of physical education for women, State Teachers College, Johnson City, Tenn.

Patton, Leslie K., appointed instructor in mathematics, Brooklyn College, Brooklyn, N. Y.

Petersen, Christine, appointed assistant to head of residence department, Spence School, New York City.

Piazza, J. S., appointed teacher of French and Spanish, The Pingry School, Elizabeth, N. J.

Plitt, Thora M., appointed instructor in science, Edgewood Park Junior College, Greenwich, Conn.

Ray, Charles W., appointed teacher of history, High School, Palmyra, N. J.

Redman, Ona Youngblood, appointed director of homemaking education, Public Schools, Fort Worth, Tex.

Rhodes, Lillian L. (A.M. 1932), appointed instructor in art, Iowa State Teachers College, Cedar Falls, Iowa.

Ringwald, Gustav A., appointed teacher of German and economics, High School, Nyack, N. Y.

Sachs, Ruth (A.M. 1931), appointed supervisor of dormitories, Syracuse University, Syracuse, N. Y.

Sackett, Howard G. (A.M. 1935), appointed elementary principal, Public Schools, East Northport, N. Y.

Shay, Mary, appointed teacher of commercial subjects, High School, Babylon, N. Y.

Shumway, Ruth K. (A.M. 1929), appointed teacher of science, Jason Lee Junior High School, Tacoma, Wash.

Simons, Laura C. (B.S. 1934), appointed house director of nurses' home, Highland Hospital, Rochester, N. Y.

Singleton, L. B., appointed educational adviser, C.C.C. Company 3417, Madison, N. C.

Skelton, Robert M. (A.M. 1935), appointed supervisor and teacher of art, High School, Boswell, Pa.

Smith, Bertrand LeRoy, appointed teacher of social science, High School, Ravena, N. Y.

Smith, Dorothy V. (A.M. 1928), appointed assistant, division of psychology, Institute of Educational Research, Teachers College, Columbia University.

Smith, Ruberta N. (A.M. 1925), appointed supervising principal, Cheltenham

Township Public Schools, Elkins Park, Pa.

Solum, Nina (A.M. 1935), appointed director of social science and English, Educational Camp for Women, Sioux Falls, S. D.

Soper, Eileen, appointed teacher of French, Latin, and social studies, Lyman School, Ashby, Mass.

Spanier, Bernard L. (A.M. 1935), appointed psychiatric social worker, Hebrew Sheltering Guardian Society, Pleasantville, N. Y.

Spencer, Margaret, appointed executive secretary and assistant instructor in French and music, Armstrong Junior College, Savannah, Ga.

Stephenson, Mary L. (A.M. 1934), appointed kindergarten teacher, Dalton School, New York City.

Stone, Editha (A.M. 1935), appointed director of health education, Suffolk County Tuberculosis and Public Health Association, Riverhead, L. I.

Swenson, Glenna H., appointed secretary, religious education and interest groups, Central Branch, Young Women's Christian Association, New York City.

Swisher, Verna, appointed dean of girls and teacher of English, High School, West Orange, N. J.

Taylor, Marjorie E. (A.M. 1935), appointed teacher of home economics, High School, Palmyra, N. J.

Thompson, Nina (A.M. 1932), appointed instructor in history, Hunter College, New York City.

Towle, G. M. Frieda, appointed instructor in crafts and design, University of Wyoming, Laramie, Wyo.

Trask, Helen M. (B.S. 1935), appointed teacher of third grade, Public Schools, Manhasset, L. I.

Tribble, Margaret (A.M. 1935), appointed instructor in French, Blue Ridge College, New Windsor, Md.

Twinem, Margaret, appointed teacher of art, Otego Central School, Otego, N. Y.

Turner, Marie A. (A.M. 1931), appointed instructor in French, Mary Baldwin College, Staunton, Va.

Voll, Walter C. (A.M. 1935), appointed director of education, Clinton Prison, Dannemora, N. Y.

Wagner, Ona R., appointed dean of women, Missouri Valley College, Marshall, Mo.

Walker, Eloise, appointed teacher of commercial subjects, Sherwood School, Paterson, N. J.

Walker, J. Paul (A.M. 1935), appointed teacher of science and mathematics, High School, Linden, N. J.

Walsh, Robert J., appointed captain, C.C.C., Stony Brook State Park, Dansville, N. Y.

Walz, Vina (A.M. 1933), appointed teacher of history, Pan-American High School, Aruba, Netherlands, West Indies.

Wheeler, Edith P. (A.M. 1935), appointed clerical worker, United States Treasury, New York City.

White, Chester Ross (A.M. 1931), appointed teacher of science, High School, Tenafly, N. J.

Whiteman, F. Arlene (A.M. 1935), appointed personal counselor, Young Women's Christian Association, Los Angeles, Calif.

Williams, Lorraine A. (A.M. 1935), appointed instructor in home economics, University of Tennessee, Knoxville, Tenn.

Willis, C. Louise, appointed health teaching supervisor, Montgomery County Committee on Tuberculosis and Public Health, Amsterdam, N. Y.

Yawberg, A. G., appointed representative, Silver Burdett and Company, Ohio.

The following appointments of Teachers College Alumni are reported by the Bureau of Educational Service:

Allison, H. Wilbur (A.M. 1934), appointed teacher of chemistry, High School, Ridgefield Park, N. J.

Ansley, Margaret L., appointed superintendent, Home for Aged Women, Binghamton, N. Y.

Bain, Ollie M. (A.M. 1932), appointed teacher of home economics, Boarding School, Eufaula, Okla.

Baker, Lilian C. W., appointed supervisor of home management, Pennsylvania.

Aldrich, Daniel G., appointed state director of resettlement work, Rhode Island State College, Kingston, R. I.

Barringer, Benton (Ph.D. 1925), appointed executive secretary, National Youth Administration, Buffalo, N. Y.

Barry, Marie, appointed teacher of English, Mepham High School, Bellmore, L. I.

Betten, Gertrude, appointed research

worker, United Fruit Co., New York City.

Blazek, Mary R. (M.S. 1933), appointed associate professor of home economics, Alabama College, Montevallo, Ala.

Blinks, Ruetta D., appointed conductor of Homemaker's School of the Air (radio work).

Bond, Elden A. (A.M. 1935), appointed school psychologist, Public Schools, Mansfield, Ohio.

Briggs, Eugene (Ph.D. 1935), elected president, Christian College, Columbia, Mo.

Bristow, William H. (A.M. 1922), appointed general secretary, National Congress of Parents and Teachers, Washington, D. C.

Brougher, John F. (A.M. 1929), appointed statistician, Public Schools, Washington, D. C.

Brown, Douglas, appointed teacher of mathematics, High School, Lyndhurst, N. J.

Brown, Grace A., appointed teacher of English, High School, Oyster Bay, N. Y.

Burkhart, Dorothy D., appointed secretary, Abbott Laboratories, Pittsburgh, Pa.

Burr, Beatrice (B.S. 1925), appointed buyer, Colonnade Co., Cleveland, Ohio.

Burtt, Jerome (A.M. 1920), elected superintendent of schools, Fitchburg, Mass.

Cahill, Bertha (A.M. 1934), appointed psychological examiner, Department of Special Education and Mental Hygiene, Wilmington, Del.

Callan, Sannie (A.M. 1925), appointed associate professor of family relations, Texas Technological College, Lubbock, Tex.

Carrigan, Ruth (A.M. 1927), appointed teacher of art, Public Schools, Wilmington, Del.

Coyle, Anne E. (M.S. 1935), appointed assistant dietitian, Garfield Hospital, Washington, D. C.

Crahan, Helen (A.M. 1935), appointed instructor in music, State Teachers College, Maryville, Mo.

Cronk, Elva E., appointed administrative dietitian, Hartford Retreat, Hartford, Conn.

Crothers, Alice P. (A.M. 1934), appointed director of religious education, Christ Church and St. Michael's, Germantown, Philadelphia, Pa.

Cutler, Robert B. (A.M. 1935), appointed teacher of music, The Pawling School, Pawling, N. Y.

DeFreest, Vyra A. (A.M. 1935), appointed teacher of history, Brantwood Hall, Bronxville, N. Y.

Doyle, Cloe (A.M. 1935), appointed teacher of physical education, Public Schools, New Rochelle, N. Y.

Doyle, Helen A., appointed teacher of social studies, Voorheesville Union School, Voorheesville, N. Y.

Druley, Helen M. (A.M. 1935), appointed assistant dietitian, Woman's Hospital, Detroit, Mich.

Durney, Helen R., appointed docent, Museum of Fine Arts, Syracuse, N. Y.

Eagan, Mary (A.M. 1933), appointed public health counselor, Kellogg Foundation, Battle Creek, Mich.

Ellsworth, Ruth E., appointed teacher of third grade, Public Schools, Bronxville, N. Y.

Fair, Eugene (Jr.) (A.M. 1932), appointed critic teacher of social studies, State Teachers College, Mankato, Minn.

Fennell, Emory E. (A.M. 1920), appointed dean and professor of education, Morristown College, Morristown, Tenn.

Fisher, Alice M. (A.M. 1933), appointed teacher of first grade, Stevens Hoboken Academy, Hoboken, N. J.

Fletcher, Elbert L., appointed director of education, State Boys' Training School, Warwick, N. Y.

Follin, Katherine (A.M. 1933), appointed director of junior primary department, Birch-Wathen School, New York City.

Garth, Russell, appointed teacher of mathematics, Junior High School, Louisville, Ky.

Golding, Donald L., appointed teacher of mathematics and science, Klamath Union High School, Klamath Falls, Oregon.

Griffey, Carl, appointed professor of psychology, Central Normal College, Danville, Ind.

Gross, Lydia (B.S. 1932), appointed fourth grade critic teacher, State Normal School, Willimantic, Conn.

Healy, Andrew C. (A.M. 1932), appointed instructor in education, Nazareth College, Kalamazoo, Mich.

Henderson, Gladys B., appointed instructor in secretarial science, Shurtleff College, Alton, Ill.

Hendrick, Marian (A.M. 1929), teacher of speech, art, and English, Newberg Union High School, Newberg, Ore.

Hogshire, Catherine (A.M. 1936), appointed teacher of sixth grade, Stratford School, Garden City, N. Y.

Holden, E. B. (A.M. 1934), elected superintendent of schools, St. Joseph, Mich.

Hopkins, Edna B., appointed teacher of fourth and fifth grade, St. Christopher's School, Dobbs Ferry, N. Y.

Hubbard, Ruth M., appointed psychologist, Consultation Bureau of Detroit, Detroit, Mich.

Irwin, Irene I. (A.M. 1930), appointed teacher of third grade, Green Vale School, Roslyn, L. I.

Iverson, Clarence M., appointed principal, High School, Schoghticoke, N. Y.

Jamerson, Richard E. (A.M. 1934), appointed instructor in physical education, Oberlin College, Oberlin, Ohio.

Jenkins, Linden B. (A.M. 1933), appointed superintendent, Anglo-Chinese Boys' School, Singapore, S.S. Malaya.

Jennings, Ruth E. (A.M. 1935), appointed office secretary, National Religion and Labor Foundation, New Haven, Conn.

Johnston, Margaret M. (A.M. 1935), appointed teacher of mathematics, Junior High School, Bergenfield, N. J.

Jordan, Mildred (A.M. 1935), appointed teacher of English, High School, Moultrie, Ga.

Knapp, Harriet E. (A.M. 1935), appointed instructor in art, Nassau College, New York University, Hempstead, L. I.

Koen, Ottis V., appointed head of English department, High School, Mount Pleasant, Tex.

Laird, Raymond L. (B.S. 1936), appointed laboratory technician, International Health Division, Rockefeller Foundation, New York City.

Land, William M. (A.M. 1922), appointed principal, Raritan Township Schools, N. J.

Laughlin, Lucile (A.M. 1932), appointed teacher of history, Shrub Oak School, Shrub Oak, N. Y.

Lill, Genevieve (A.M. 1934), appointed supervisor of health, County Schools, San Bernardino, Calif.

Liter, Oneta (A.M. 1932), appointed assistant national youth director, National Youth Administration, Louisville, Ky.

Love, Esther M., appointed teacher of mathematics and social studies, Seiler School, Harrisburg, Pa.

Lowenstein, Eleanor, appointed social case worker, Westchester County, Ossining, N. Y.

Mahnken, Harry A. (A.M. 1935), appointed assistant track coach, Princeton University, Princeton, N. J.

Maloney, Paul F. (B.S. 1934), appointed teacher of mathematics, Franklin K. Lane High School, Brooklyn, N. Y.

Mathewson, Lucile (B.S. 1928), appointed field secretary, Cummington School, Cummington, Mass.

Matravers, Chester H., appointed instructor in philosophy, psychology, and education, Central State Teachers College, Stevens Point, Wis.

Mayer, Marjorie (A.M. 1929), appointed instructor in physical education, Colorado State College, Fort Collins, Colo.

McCoy, Melvin L., elected superintendent of schools, Iron River, Mich.

McDonald, Clara M. (M.S. 1933), appointed teacher of natural science, Morristown College, Morristown, Tenn.

McDonough, Mary A. (A.M. 1936), appointed teacher of English, High School, Pearl River, N. Y.

McLain, Helen L. (B.S. 1930), appointed primary supervisor, The Holman School, Ardmore, Pa.

Mead, Mildred (A.M. 1933), appointed supervisor of student teaching, Temple University, Philadelphia, Pa.

Messman, Roselma (A.M. 1932), appointed director of home economics, National College of Education, Evanston, Ill.

Minasian, Henry (A.M. 1934), appointed teacher of commercial subjects, High School, Salem, N. J.

Moore, Vinco Fern (A.M. 1932), appointed teacher of speech and dramatics, Washington High School, East Chicago, Ind.

Morgan, Florence Lisle, appointed teacher of English and librarian, High School, Athens, N. Y.

Moyer, Clifford L. (A.M. 1935), appointed teacher of biology, Central High School, Kansas City, Mo.

Neff, Florence H., appointed teacher of science, High School, Upper Darby, Pa.

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